

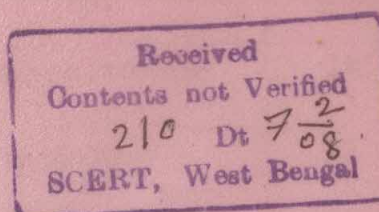
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Govt may include traffic rules in NCERT curriculum

New Delhi, Nov 15 :

Alarmed by the growing number of road accidents and subsequent deaths, the Home Ministry is planning to include traffic guidelines as part of the school curriculum so that youngsters can imbibe good driving culture. Home Ministry officials on Thursday said they are interacting with the Human Resources Development Ministry to draw a draft plan so that traffic rules can be a part of the school textbooks prepared by the National Council of Education Research and Training (NCERT).

"Introduction of such traffic guidelines will certainly help in dealing with traffic problems more efficiently not only in the Capital but as well in other metropolitan cities," Gupta said while inaugurating the road safety exhibition at the 27th edition of the India International Trade Fair.

He said the Home Ministry would take up this issue with the HRD Ministry for early implementation. According to Government estimates, India accounts

for about 10 percent of the total 1.2 million fatal accidents in the world. In the year 2000, the Planning Commission had assessed the social cost of road acci-

dents in the country at Rs 550 billion. Gupta said the Government was also considering a proposal to double the vehicle insurance

but citizens' contribution is required to make the roads safer for everyone. People must adhere to traffic norms and regulation," Dadwal said.

Commissioner Y.S. Dadwal said.

- **More insurance premium likely for traffic violators**
- **Licences of drivers found guilty of more than one accident may be cancelled**



amount and cancellation of driving licenses for three years for those found guilty in more than one road accident. Delhi Police Commissioner Y.S. Dadwal said.

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He added that the Government's proposal of building underground parking spaces below the parks in residential areas to solve parking problems is under consideration.

"The proposal is currently under consideration but if approved by the concerned authorities, the residents have to bear the construction charges," he said.

According to estimates, Delhi has over 5.5 million vehicles and gets 1,000 new ones every day. Over one million vehicles also join the Capital's traffic every day from neighbouring states. IANS

Learning to Live Together: The Ultimate Goal of Education and Role of India's Cultural Heritage

S N P Sinha

(Former Vice Chancellor, Patna University, Patna. B/92, P.C.Colony, Lohia Nagar, Patna-800020)

"Peace can come when our minds become endowed with generosity and goodwill towards all. We must be filled with the moral power of love and the vision of spiritual unity. Education should aim to produce men big enough to see the human race as a whole/or such type of civilized students be trained to have insight in the cultural ethos of India - which is universal in nature."

— Tagore

"It is noteworthy that the University's outlook of synthesis and harmony, the search for truth, and the emphasis on the use of knowledge of human good, in the spirit of service, coincides with the ideals and the goals of education cherished in India, through the ages from the ancient past to the present day." - Former President Dr. Shanker Dayal Sharma.

".....This spiritual gift that makes Man human is still alive in Indian souls. Go on giving the world Indian examples of it, Nothing else can do so much to help mankind to save itself from self-destruction."

— Arnold Tonybee

Tagore's idea to establish Vishwa Bharti at Shanti Niketan was to impart education for producing enlightened citizen - cultural, aesthetic, liberated and emancipated man (*savidya ya vimuktye*), spiritually well conditioned with a spirit of sacrifice and social service. To seek to realise in a common fellowship of study the meeting of the East of the West and thus ultimately to strengthen the fundamental conditions of world peace through the establishment of free communication of ideas between the two hemispheres.....True education must have national way of life and at the same time have organic connection with the whole world. He always pleaded for synthesis of culture. Such cultural ethics of "eternal value" should be implanted in the minds of every student so that he becomes enlightened citizen with a universal vision full of compassion and humanism.

The union of all mankind making is the true purpose of Education.

The UNESCO Commission for Education in the 21st century drafted a report in 1996 entitled 'Learning: the treasure within.' According to this report one of the pillars of learning is "Learning to live together." To achieve this it was suggested to develop all dimensions of value education. Our cultural ethos have the potential to achieve this goal. The UNESCO report also pleads for an education which is "Rooted to culture and committed to progress." Developing a harmonious and integrated personality would not be possible if the system does not inculcate values of culture, heritage and traditions. In this regard Indian cultural values need to be thoroughly studied, analysed and incorporated in the educational system from the base to the apex.

Human relationship is fast disintegrating into granules today. The tendency, not to look beyond self has eaten up the values of cohesive relationship. In this age of technological and commercial civilization, the 'Human bondage' is fast losing its grip. The present situation is really alarming. To save this world from total collapse, Indian philosophy of '*Vasudhaiva Kutumbakam*' has to be practised sincerely.

India's Cultural Values have the Potential to Contribute to World Unity

The late president of India, Dr. Shankar Dayal Sharma once said, "Our country is a mosaic, harmonising various cultures it encompasses. With an impressive diversity of languages, religion and ethnicities, India retained its sense of oneness through the march of history. India became India by not merely tolerating, but accepting and even promoting diversities. In doing so, it evolved its unique ethos. The range of diversities in our society has naturally found expression in the co-existence of different race and cultural ethos.

The enrichment resulting from the fusion of different streams has been described thus by Pandit Nehru, "I am proud of India, not only because of her ancient, magnificent heritage, but also because of her remarkable capacity to add to it by keeping the doors and windows of her mind and spirit open to fresh and interrogating minds from distant lands. She was far too strong to be submerged by outside streams, and she was too wise to isolate herself from them."

Gandhiji's concept of 'non-violence' (*Ahimsa*) is for the 'liberation of all human kind.' This weapon can help mankind to save itself from self destructions and the same has been a unique contribution of India to the disintegrating world. The philosophy of peaceful co-existence rooted in non-violence laid the foundation of "One-earth-one-family." We have a deep and abiding appreciation of the rich vein of spirituality that runs our culture, our history and into every citizen of this country. That rich vein of spirituality is the rich source of our moral values, of our ideals and our standards, of our goals and of our objectives. We venerate this spiritual tradition and respect all in which the spirituality manifests.

According to Maharshi Aurobindo, "It is India that shall be the cradle of the world in the years to come. India has the greatest potential of leading the world by developing the spiritual and moral values of mankind. It is India alone that can accomplish the spiritualization

of the world. God has destined India distinctly to act as perennial source of sacred spiritualism and this is in her destiny not only to lead but also to change it."

In history too, those rulers have been revered by posterity who were fair and just to all their subjects. For example emperor Ashoka has been immortalised by his expressions on rock edicts." One who reverse one's own religion and to glorify it over all others, does injure one's own religion most certainly concord alone is meritorious. '*Samavaya eva Sadhuh*'. The secular tradition has always contributed a great deal in laying the foundation strong enough to sustain any threat to our 'Pluralistic view of life.'

India believed in the idea- "No nation can be great whose people are narrow in thought or in a action". Understanding and harmony have been the basis of our existence.

Dr. Zakir Hussain, former President of India once said... "We want peace between the individual and groups within nations. They are all vitally interdependent. If the spirit of sermons on the Mount, Budha's Philosophy of Compassion, the Hindu concept of Ahimsa and the passion of Islam for obedience to the will of God can combine together, then we would succeed in achieving the most potent influence for the world peace".

Max Muller has written in his book—India, What it can teach us, "No where such metaphysical ideas struck roots so deep in the mind of a nation as in India. Whatever sphere of the human mind you may select for special study, you have to go to India because some of the most valuable and most instructible materials in the history of men are treasured up in India and India only. Similarly Macdonald observed, "If one were to turn to any great philosophy and any great system of thought upon which could build up a harmony between races, conflicting thoughts, where one could go to find it more readily than to the great Philosophies of India itself." There is no other part of the world where the relation between men and of man and the state is so fair and humane to us that the most striking feature of ancient Indian civilization is its humanity for this, as well as for her great achievements in literature, art and mathematics, one European student at least would record his admiration for India's ancient culture."

Through technological development the world has grown into a 'global village' and living under the shadow of 'annihilated distance'. Thus today's world is in the desperate need of learning from India's

philosophy of non-violence, tolerance and peaceful co-existence. She has always demonstrated the great ideals of '*Vasudhaiva Kutumbakam*' to the world.

A renowned historian Arnold Tonybee had rightly visualised a great hope and future in the cultural ethos of India for the disintegrating world and for the 'blood splattered humanity.' He once remarked, "But we have incurred a rather formidable obligation to go on setting an Indian example of non-violence to the rest of the world. If India were ever to fail to live up to this India ideal which is the finest and therefore most exacting legacy in Indian heritage, it would be a poor look out for mankind as a whole that means a turn towards self preservation or towards self destructing seeing that we are now living in the Atomic age. Today the large hearted and broad minded spiritual thoughts survive in India almost alone, so world looks to India to preserve this spiritual heritage as common treasure for mankind a treasure of inestimable value in the Atomic age. We have to love our neighbours as precious achievement of 'Variety in Unity' is of world wide importance.

For the 'Bleeding world' and the future of mankind Dr. S. Radhakrishnan observed: We are the heirs of the heritage of the whole of humanity and not merely of nation or religion. In a special sense India has been a small edition of the world. It is a laboratory where experiments of racial and religions synthesis, relevant to the problems of the world are undertaken and worked out.....India seems to have been selected for the purpose of offering solutions for racial and religious conflicts. She had an intelligent understanding of the deeper unity amidst all diversity. It is due to her assimilative genius that has succeeded in harmonising the mighty currents of the world's great religions that have met on her soil. We have developed nuclear instruments to the highest extent. It is because of this nuclear proliferation that we are afraid of one another and are living in an atmosphere of distrust and fear. It is in the correction of this imbalance, this maladjustment, which has thrown us all not this present condition, that, if we are true to the great ideals of *Upnishads* and *Budha* down to Gandhijee; if we are able to stand by them, come what may, irrespective of the consequence, it will be possible for us to help the world to settle down. It is our pride that the different people live together in amity and harmony.....The spirit of this country is renunciation and friendship for all you will be able to make an immense contribution to the spread of true Indianess; which is universalism in essence.....Let us dedicate ourselves today, in

the spirit of scholarship which knows no frontiers, and which if genuine, breeds humanity and tolerance, to the task of building a new world, to ridding ourselves of every trace of hatred, intolerance and fanaticism of every variety. Let us move forward to a great meeting point where we respect every man, every race, every culture, every creed.

The above discussion on India's contribution to world unity clearly supports the notion that this goal has to be achieved for attaining effective and integral education system. Higher educational system should give due importance to the cultural ethos of India. It has been rightly acclaimed that true education minimises the distance among people belonging to different race, creed and nation. The education that creates chasm between people is not the real education. This is essential for the betterment of human race—their survival and peaceful coexistence.

We cannot remain indifferent to people around us nor shrink from the task of advancing human civilization as a whole to greater unity, greater heights of advancement and for onward march of civilization and human race. We have to set our goals for this objective and plan educational system to produce enlightened citizen with the global vision. And this vision is possible only by exposing our students to "Spiritual gifts, that makes man human; is still alive in Indian souls and soils." Nothing else can do so much to help mankind to save itself from self-destruction.

We need shared values for the emerging global society. As global citizens committed to human survival or welfare, we must use the latest array of innovative and interactive pedagogic methodologies to structure a worldwide programme of education. □

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Plan mulls massive secondary education expansion

By U. ANAND KUMAR

New Delhi, Dec 10: The Centre has proposed massive expansion of secondary education, while giving priority to continuous teacher training during the 11th Five-Year Plan.

The Plan outlay will have a substantial increase from 7.7 per cent to 19.4 per cent.

Recognising that the teacher education is the cornerstone of education development, the Union Ministry of Human Resources Development has proposed an allocation of Rs 4,000 crore for the same in the Plan. The National Development Council would finalise the Plan on December 19.

Though it was decided earlier to merge teacher education with Sarva Siksha Abhyas, the HRD Ministry has decided to retain teacher education as a

separate and distinct sector.

In a bid to overhaul the secondary education, the Ministry proposes to implement the Centrally-sponsored Scheme for Universalisation of Access

secondary schools.

The SUCCESS, in partnership with states, aims at recruitment of additional teachers, necessary civil works, setting up of laboratory, library, institutional

secondary education. Such norms would be developed for each state with common national parameters and state-specific norms.

According to the draft paper to be discussed in the meeting of National Development Council, the Ministry proposes to open 6,000 high quality model schools at block level to serve as benchmark for excellence in secondary schooling. About 3,500 of these will be public funded schools, while 2,500 will be through public-private partnership with an emphasis on geographical, gender and social equity. A provision for hostels and residential schools for girls has also been made in the Plan.

The HRD Ministry will ask the state governments for a more liberal approach in allowing private schools to be set up to meet the large unmet demand for quality education.

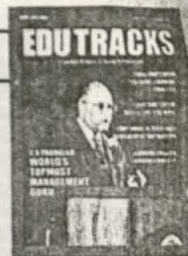
The HRD Ministry has proposed an allocation of Rs 4,000 crore for the teacher education in the 11th Five Year Plan. The National Development Council would finalise the Plan on December 19

for Secondary Education (SUCCESS). The scheme proposes rapid upgradation of 15,000 upper primary schools to secondary schools and expansion of intake capacity in 44,000 existing sec-

arrangements for faculty training arrangements, resources support groups and achievement of 100 per cent IT connectivity. It would also provide norms for sec-

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Relationship between Emotional Intelligence and Certain Achievement Facilitating Variables of Higher Secondary School Students

In this study aimed at finding the relationship between Emotional Intelligence and Achievement facilitating variables, and comparing Emotional Intelligence of groups in pairs classified on the basis of sex, locale of the school, nature of school management and SES, the investigator finds that there is significant relationship between Emotional Intelligence and Achievement motivation.

In this cyber age, all societies and its members are facing tough competition. The rapidly growing population, desire for higher standard of living and sudden and intense exposure to western world of glamour have greatly enhanced the pressure of competition. People want too much, and too quickly. Education is not the goal; it has become the media to gain materialistic aspects of the world. Unfortunately, even parents most often encourage their children in this direction i.e. somehow get power, position and money. This has led to the belief that intellect and success are synonymous.

Until very recently a lot of emphasis was laid on the role of logical thinking, ability to learn efficiently, and memorizing the material in determining the conventional Intelligence Quotient (IQ). But with the dawn of the new century great stress has been placed on the emotions working behind the intellect. Today's teenagers have the first generation access to many things, which were beyond the reach of their parents. Majority of the children are poor at life skills because the society has not bothered to teach the child the basic essentials of handling anger, and resolving them in a proper way. By neglecting the emotional lessons, we risk largely wasting the window of opportunity presented by the slow maturation of the brain to help children activate a healthy emotional repertoire. So with the changing times, the student as a whole has become the center of concern -not only his reasoning capacities, but also his creativity, emotions, and interpersonal skills.

Here comes Emotional Intelligence. Basically, intelligence is related to interpersonal and intra-personal areas (last two components of Multiple Intelligence) referred to as 'Emotional Intelligence'

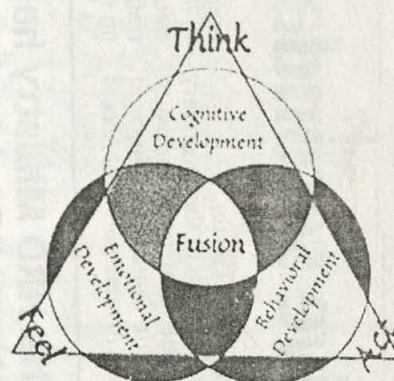
"Emotional Intelligence is a person's ability to understand his or her own emotions and the emotions of others and to act appropriately based on this understanding".

It was in the mid-nineties that the term Emotional Intelligence took the business world by a storm. And it was **Daniel Goleman** who popularized it through his research on Emotional Intelligence (EI). It is said that IQ alone is no more the measure for success; it only accounts for 20%; Emotional and Social Intelligences, and luck account for the rest. (Goleman, 1995) It was also found that whereas people with high IQ were real flops in real life, in their families or in the community, people with high EI have proved themselves successful in these areas.

The Relation between EQ and IQ

One reason the EQ concept caught on so quickly is the belief - Goleman's and others'-that the EQ can be taught, whereas IQ (Intelligence Quotient) is genetically fixed and less malleable. Where **IQ is a fixed capacity for processing cognitive information, EQ is an acquisitive skill** for making great decisions, living with integrity, and connecting with others. IQ and EQ are complementary parts of a whole and a healthy person. Great intellect does not diminish emotional capacity, and "emotionality" is not at odds with rational thought. People used to see these at odds, but one of the great contributions of modern

neuroscience is the realization that emotion and cognition actually work together. People with high IQ and low EQ do not function well. However the reverse is not true. (Josh Freedman). It is very important to understand that emotional intelligence is not the opposite of intelligence, it is not triumph of heart over head—it is the unique intersection of both.



School education is an important segment of the total educational system contributing significantly to the individual as well as to national development. A good school provides conducive environment for development of cognitive, affective and psychomotor domains for all round development of individuals. Perhaps the importance of the interface between 'cognition, emotion and action' may be appreciated better by recalling the balance that has to be maintained between 'JNANA YOGA, BHAKTI YOGA and KARMA YOGA' respectively as mentioned in the ancient Indian scriptures. Coming back to the modern academic and

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professional literature, the three educational taxonomies involve Cognitive, Affective and Psychomotor (CAP) domains. Today, the

trouble with the processes of education is the pervasive emphasis on cognition and the neglect of the 'affect' state of the learners. As learning is not a mechanical process there is a need to recognize the interface between cognition and emotion (affect attribute). Therefore, education for promoting emotions needs to be recognized as an essential element of the educational process in the classroom.

While laudable efforts are being made to raise academic standards, this new and troubling deficiency is not being addressed in the standard school curriculum. Teaching emotional and social skills is very important at school; it can affect academic achievement positively not only during the years they are taught, but also during the years that follow as well. Teaching these skills has a long-term effect on their achievement. There is a great need for lessons in handling emotions and settling disagreements peacefully. A frequently faced situation is the loss of memory during the examination in spite of a deep understanding of the subjects—just because their mood is overflowing with unwanted emotions that the general intelligence is unable to handle. Thus arises the need to have higher EQ also in order to be absolutely successful at the given task.

In short the combination of IQ and EQ makes one successful in various activities of general life including examinations. Thus it would not be wrong to say that emotions, not IQ, may be the true measure of human intelligence.

To conclude, it is worth recalling the four pillars of Learning i.e., "LEARNING" TO KNOW, LEARNING TO DO, LEARNING TO BE and LEARNING TO LIVE TOGETHER as mentioned in UNESCO's historic report of the "International Commission on

Education in the 21st Century". The last two pillars clearly indicate the 'Emotions' to be evolved and strengthened among students through suitable learning strategies. In short the formation of emotional skills is much easier in the formative years from birth to the late teens and schools in the Indian context would be the right place to introduce emotional skills in children.

Need and Significance of the Study

"Emotional Intelligence is helping to focus on what it means to be complete human beings." – Maurice Elias, EQ Today, 1999

India is faced with challenges at home whose urgency cannot be denied. Whether the country can face these internal as well as external challenges successfully will decide the quality of life of the citizens of tomorrow. Education is the most effective instrument to meet these challenges. Early research on the predictors of academic achievement focused primarily on intellectual and ability factors. There is considerable evidence that intelligence alone does not account for all the variance in academic achievement. (Lavin, 1967, Cattell, Butcher, 1968; Vernon, 1950). Although intelligence is perhaps still the single most effective predictor of school achievement, research has shown that social and emotional factors, anxiety and motivation all affect both the development of intelligence and the level of achievement of child.

Current research has concluded that emotional intelligence and related non-traditional measures of intelligence and human performance are more predictive of academic and career success than IQ tests and other measures of scholastic aptitude and achievement. (Nelson and Low, 2003; Gardner, 1983, 1993, 1997; Sternberg, 1985, 1995; Goleman, 1995, 1997; Dryden and Vos, 1994; Astin and Associates, 1993; Townsend and Gebhardt, 1997; Weisenger, 1985, 1998; Cooper and Saway, 1997; and Epstein, 1998). Interdisciplinary research clearly indicates the importance of emotional intelligence and emotional skills to student achievement, career

success, personal well-being and leadership, to improve student achievement and academic success.

These research findings emphasize the necessity of including emotional skill development in programmes designed

Research in brain-based learning suggests that emotional health is fundamental to effective learning. According to a report from the National Center for Clinical Infant Programs, the most critical element for a student's success in school is an understanding of how to learn. (*Emotional Intelligence*, p. 193.) The key ingredients for this understanding are:

- Confidence
- Curiosity
- Intentionality
- Self-control
- Relatedness
- Ability to cooperate

Historically, the emotional development of students does not come into focus unless behavior becomes problematic, i.e. dropping out, lack of self-confidence, underachievement, violence, drug abuse, teen pregnancy, bullying, and lack of motivation and examination anxiety. When severe problems become evident, educators attempt to help; however, the help is often too little and too late. Proactive and systemic programmes for identifying and developing the emotional intelligence skills important to student achievement and personal well-being (mental, physical, and emotional health) are needed to prevent problematic behaviors rather than respond to them after the fact.

These traits are all aspects of Emotional Intelligence. Basically a student who learns to learn is much more apt to succeed. Emotional Intelligence has proven a better predictor of future success than traditional methods like IQ and standardized test scores.

Emotionally intelligent adults make better decisions, they live with integrity, they use their emotions as a source of energy and direction, they are more effective at

RESEARCH



solving problems, they collaborate better, they are more effective leaders, better spouses, and more conscious parents. Interestingly, they are not always "happier" - they are less depressed, but more aware of both comfortable and uncomfortable feelings. (Josh Freedman, 2002)

Building one's Emotional Intelligence has a lifelong impact. EQ helps us understand how and why we react and respond to certain events in the organization. It also helps us to appreciate that our daily encounters are shaped not just by our rational judgment and our personal history but are largely influenced by our perceptions and expectations.

The primary function of the school is the imparting of academic skills and it is a fact beyond doubt. Apart from intellectual capacities, factors like SES, Self-concept, Achievement Motivation, Examination Anxiety, and Emotional Intelligence affect the functioning of the child in the school. So the investigator studied the relationship between Achievement facilitating variables [Socio-economic Status, Achievement Motivation, Examination Anxiety, Self-concept Scale] and Emotional Intelligence.

Objectives of the Study

The objectives of the study are the following.

- To find the relationship between Emotional Intelligence and Achievement facilitating variables for the whole sample and relevant sub-sample
- To compare Emotional Intelligence of groups in pairs classified on the basis of sex, locale of the school, nature of school management and socio-economic status (High SES, Low SES).

Hypotheses

- There will be significant relationship between Emotional Intelligence and Achievement facilitating variables of the whole sample and relevant sub-samples taken for the study.

- There will be significant difference in Emotional Intelligence of groups classified in pairs on the basis of sex, locale of the school and nature of school management and low SES and high SES.

Purpose

The purpose of the investigation is studying the "Achievement Facilitating Variables and Emotional Intelligence of Higher Secondary School Students."

Method

The investigator has adopted Normative Survey Method for conducting the study.

Sample

The study has been conducted on a representative sample of 387 [191 boys and 196 girls] and Higher Secondary School students of Kollam District in Kerala selected on the basis of stratified sampling techniques. Due representation to factors like sex, locale of the school, and nature of school management was given while selecting the sample.

Tools Used for the Study

The tools used for the present study are

- Emotional Intelligence Test
- Socio-economic Status Scale.
- Achievement Motivation Scale.
- Examination Anxiety Scale.
- Self-Concept Scale.

Procedure

Administering the above tools on the respective samples of 387 the

investigator collected the data essential for the study. The data collected is analyzed using appropriate statistical techniques.

Statistical Technique

The statistical techniques employed for the analysis of data are

- Product Moment Coefficient of Correlation
- Test of Significance of Difference between Means

Analysis and Interpretation

Table 1 shows that there is substantial or marked relationship between Emotional Intelligence and Socio-economic Status for the whole sample and sub-samples -boys, urban subjects, rural subjects, and government institutions. Also there is no relationship between Emotional Intelligence and Socio-economic Status for girls and private institutions. Table 2 describes the relationship between Emotional Intelligence and Self-concept for the whole sample and relevant sub-samples. The study reveals that there is no marked relationship between components of Emotional Intelligence and Self-concept for the whole sample and sub-samples - boys, girls, urban subjects, rural subjects, government institutions, and private institutions. Table 3 depicts the relationship between Emotional Intelligence and Achievement Motivation for the whole sample and relevant sub-samples. It shows that there is substantial or marked relationship

Table-1: Correlation Table Showing the Relationship between Emotional Intelligence and Socio-economic Status for the Whole sample and Relevant Sub-samples

	Whole Sample	Sub Samples					
		Boys	Girls	Urban	Rural	Govt.	Private
Emotional Perception and SES	0.105*	0.145*	0.059	0.206**	0.006	0.126	0.069
Emotional Facilitation of Thought and SES	0.088	0.134	0.038	0.089	0.091	0.119	0.045
Emotional Understanding and SES	0.097	0.103	0.100	0.055	0.146*	0.161*	0.019
Emotional Management and SES	0.142**	0.178*	0.100	0.136	0.148*	0.117	0.165*
Emotional Intelligence and SES	0.163**	0.201**	0.122	0.186**	0.156*	0.204**	0.110

** Shows 0.01 level significance; * shows 0.05 level significance

RESEARCH

Table-2: Correlation Table Showing the Relationship between Emotional Intelligence and Self-Concept for the Whole sample and Relevant Sub-samples

	Whole Sample	Sub Samples					
		Boys	Girls	Urban	Rural	Govt.	Private
Emotional Perception and Self-concept	0.086	0.010	0.164*	0.129	0.033	0.156*	0.031
Emotional Facilitation of Thought and Self-concept	0.065	0.046	0.080	0.123	0.005	0.137	0.046
Emotional Understanding and Self-Concept	0.031	0.029	0.096	0.040	0.032	0.043	0.113
Emotional Management and Self-Concept	0.023	0.068	0.021	0.042	0.086	0.012	0.084
Emotional Intelligence and Self-Concept	0.035	0.004	0.062	0.093	0.034	0.134	0.101

** Shows 0.01 level significance; * shows 0.05 level significance

Table-3: Correlation Table Showing the Relationship between Emotional Intelligence and Achievement Motivation for the Whole Sample and Relevant Sub-samples

	Whole Sample	Sub Samples					
		Boys	Girls	Urban	Rural	Govt.	Private
Emotional Perception and Achievement Motivation	0.198**	0.223**	0.171*	0.239**	0.157*	0.113	0.269**
Emotional Facilitation of Thought and Achievement Motivation	0.264**	0.330**	0.193**	0.388**	0.138	0.149*	0.351**
Emotional Understanding and Achievement Motivation	0.144**	0.260**	0.035	0.240**	0.048	0.010	0.292**
Emotional Management and Achievement Motivation	0.243**	0.287**	0.197**	0.313**	0.177*	0.118	0.359**
Emotional Intelligence and Achievement Motivation	0.319**	0.391**	0.237**	0.432**	0.201**	0.151*	0.465**

** Shows 0.01 level significance; * shows 0.05 level significance

Table-4: Correlation Table Showing the Relationship between Emotional Intelligence and Examination Anxiety for the Whole Sample and Relevant Sub-samples

	Whole Sample	Sub Samples					
		Boys	Girls	Urban	Rural	Govt.	Private
Emotional Perception and Examination Anxiety	0.253**	0.235**	0.267**	0.290**	0.209**	0.156*	0.349**
Emotional Facilitation of Thought and Examination Anxiety	0.228**	0.269**	0.175*	0.263**	0.189**	0.186**	0.244**
Emotional Understanding and Examination Anxiety	0.117*	0.068	0.154*	0.129	0.105	0.038	0.210**
Emotional Management and Examination Anxiety	0.171**	0.124	0.221**	0.186**	0.155*	0.084	0.250**
Emotional Intelligence and Examination Anxiety	0.288**	0.249**	0.328**	0.320**	0.253**	0.178*	0.381**

** Shows 0.01 level significance; * shows 0.05 level significance.

between components of Emotional Intelligence and Achievement Motivation for the whole sample and sub-samples -boys, urban subjects, rural subjects, private institutions. There is marked relationship between Emotional Intelligence and Achievement Motivation for the whole sample and relevant sub-samples. Table 4 shows that there is substantial or marked relationship between Emotional Intelligence and Examination Anxiety for the whole sample and relevant sub-samples

It is inferred from the Table 5 that there is significant difference between boys and girls in their emotional understanding and emotional intelligence, but there is no significant difference between boys and girls in their emotional perception, emotional facilitation of thought and emotional management. It can also be seen that the Means of emotional facilitation of thought and emotional intelligence are high for boys when compared with that of girls.

Table 6 reveals that there is no significant difference between rural and urban students in their emotional perception, emotional facilitation of thought, emotional understanding, emotional management, and emotional intelligence. It can also be seen that the Means of emotional intelligence is high for rural students when compared with that of urban students

From Table 7 it is clear that there is significant difference between government and private school students in their emotional perception, emotional facilitation of thought and emotional intelligence, but there is no significant difference between government and private school students in their emotional understanding, and emotional management. Also it can be seen that the Means of emotional intelligence is high for private school students when compared with that of government school students.

It is inferred from the above table that there is significant difference between low SES and high SES students in their emotional



facilitation of thought, emotional management and emotional intelligence, but there is no significant difference between low SES and high SES students in their emotional perception and emotional understanding. Also it can be seen that the

Means of emotional facilitation of thought and emotional intelligence are high for high SES students when compared with that of low SES students.

Implications of the Study

From the t-test, we can conclude that boys and girls differ in their emotional intelligence and emotional understanding. Boys perform better than girls in emotional intelligence and emotional understanding. The gender difference found in the present study was significant, and suggests that any research with this measure should take that difference into account. This study reports a gender difference with boys having higher social skills than girls. Boys and girls show no significant difference in emotional perception, emotional facilitation of thought, and emotional management. Emotional facilitation of thought uniquely involves using emotions to enhance reasoning whereas emotional perception, emotional understanding, emotional management involve reasoning about emotions. The gender differential sensitivity to emotional intelligence reactions found in this study, should be followed up. If the current findings are taken into account, many girls probably need coaching and deeper understanding about the emotional understanding, as do some boys. Also there is a significant difference between high SES and low SES subjects. It may be concluded that curriculum should deal more explicitly with the concept of emotional intelligence and its development, and management in common classroom situations. The teachers must identify, appreciate and nurture emotional intelligence in the students in a proper way. This will enable them to know, understand and manage their emotions and it will help them to live a happy life later.

The teachers should structure the presentation of the concepts in a style that engages most of emotional intelligence. Exploring the concept of emotional intelligence is directly related to the understanding of teaching, motivation and self-directed learning. Infusion model teaching can develop emotional intelligence. Situations involving emotional states are a familiar aspect of any school or classroom environment. For the classroom practitioner, understanding the impact of their own emotions and those of others have on the effectiveness of the teaching-learning context is important. Being able to read the emotions of others is a key component of understanding students as individuals. This understanding is a key component of any process of self-regulation. To inculcate/ develop emotional intelligence teacher should:

Encourage emotionally literate media: Read emotionally literate books to your children. Take them to emotionally literate films and plays. Avoid stories containing a lot of violence and cruelty, unless they make a clear moral statement about anger and how to deal with it in a good way. This article discusses the

Table-5: Statistical Indices and the Results of the Critical Ratio Test for Comparing Girls and Boys

Dimensions	Boys N= 191		Girls N = 196		Calculated value of 't'
	Mean	SD	Mean	SD	
Emotional Perception	55.18	5.68	54.48	5.12	1.260
Emotional Facilitation of Thought	58.30	5.53	57.58	5.16	1.336
Emotional Understanding	56.05	5.31	54.65	5.70	2.500*
Emotional Management	54.08	5.79	53.86	5.56	0.384
Emotional Intelligence	223.62	15.67	220.58	13.36	2.052*

** Shows 0.01 level significance; * shows 0.05 level significance

Table-6: Statistical Indices and the Result of the Critical Ratio Test for Comparing Rural Subjects and Urban Subjects

Dimensions	Rural N= 191		Urban N = 196		Calculated value of 't'
	Mean	SD	Mean	SD	
Emotional Perception	55.04	4.87	54.62	5.89	0.755
Emotional Facilitation of Thought	58.03	5.20	57.84	5.51	0.348
Emotional Understanding	55.73	5.31	54.97	5.75	1.348
Emotional Management	54.01	5.69	53.93	5.66	0.133
Emotional Intelligence	222.81	13.63	221.37	15.50	0.970

** Shows 0.01 level significance; * shows 0.05 level significance

Table-7: Statistical Indices and the Result of the Critical Ratio Test for Comparing Government Institutions and Private Institutions

Dimensions	Government N= 194		Private N = 193		Calculated value of 't'
	Mean	SD	Mean	SD	
Emotional Perception	54.15	5.80	55.50	4.91	2.469*
Emotional Facilitation of Thought	57.17	5.35	58.70	5.26	2.846**
Emotional Understanding	55.31	5.80	55.38	5.30	0.122
Emotional Management	53.49	5.82	54.45	5.49	1.662
Emotional Intelligence	220.13	14.62	224.04	14.38	2.651**

** Shows 0.01 level significance; * shows 0.05 level significance

concept of emotional intelligence and defends the development of such a measure specifically related to the situations in the teaching environment, an environment where emotional intelligence is considered to influence a teachers' thoughts and actions.

Teach emotional self-defense: Teach children how to defend their boundaries and reject behavior they

Table-8: Statistical Indices and the Results of the Critical Ratio Test for Comparing High SES and Low SES

Dimensions	High SES N= 96		Low SES N = 162		Calculated value of 't'
	Mean	SD	Mean	SD	
Emotional Perception	55.75	5.15	54.44	5.45	1.934
Emotional Facilitation of Thought	59.35	5.28	57.64	5.39	2.498*
Emotional Understanding	56.13	5.56	54.95	5.67	1.629
Emotional Management	55.15	5.81	53.43	5.76	2.298*
Emotional Intelligence	226.38	14.38	220.46	14.48	3.184**

** Shows 0.01 level significance; * shows 0.05 level significance

don't want by saying, "I don't like that," or "please stop it," or "leave me alone." These are all acceptable and effective ways of deflecting unwanted behavior. Role-play such situations and teach them how to respond to different scenarios

Be patient: Educating children takes time, but once they've learned, the lesson will stick. Repeat your lessons over and over in a consistent manner and be sure to live what you preach. Remember: An apple doesn't fall far from the tree

There are significant differences between government and private institutions with respect to emotional perception, emotional facilitation of thought and emotional intelligence. Also subjects of private institutions are more emotionally intelligent than the subjects of government institutions. This is because of the emphasis laid on the emotional perception, emotional facilitation of thought, emotional management by the teachers and the school authorities.

This study suggests that there is a significant and strong relationship between emotional intelligence and achievement motivation. Emotional intelligence (EQ) increases achievement motivation, optimism, joy, and purpose, while decreasing violence, depression, and isolation. Teachers should create a learning environment that arouses and sustains children's curiosity and intrinsic motivation to build a context where high achievement is valuable and enjoyable. Also we should ensure transfer of EQ skills into academic subjects to increase performance, achievement, critical thinking, and creative thinking

References

- AbiSamra, Nada (2000). *Emotional Intelligence and Academic Achievement*, Research in Education, Auburn University at Montgomery, March 3
- Arnold, M. B (1960). *Emotion and Personality*, Neurological and Physiological Aspects. New York: Columbia University Press.
- Bar-On, R. (2000). *Emotional and social intelligence: Insights from the emotional quotient inventory*. In R. Bar-On & J. D. A. Parker (Eds.), *The handbook of emotional intelligence: Theory, development, assessment and application at home, school and in the workplace*. San Francisco, CA: Jossey-Bass, pp. 363-388
- Bar-On, R., and Parker, J.D.A. (2000) (Eds). *The Handbook of Emotional Intelligence: Theory, Development, Assessment and Application at Home, School and in the Workplace*, San Francisco: Jossey-Bass/Wiley

- Bonatizis, K. and Atkes, (2002). *Emotional Intelligence: Realizing the Power of Emotional Intelligence*. Boston: Massachusetts: Harvard Business School Press.
- Carolyn Webster - Stratton. *How to Promote Children's Social and Emotional Competence*. Paul Chapman Publishing Ltd, pp.285 - 314.
- Cary Cherniss (2000) *Emotional Intelligence: What it is and why it matters*. Graduate School of Applied and Professional Psychology, Rutgers University, Paper Presentation April-15.
- Cattell, R.B. (1969) *Prediction and Understanding of the Effect of Children's Interest Upon Performance*, Handbook for the High School Personality Questionnaire. Illinois, IPAT, 1969.
- Cherniss, C., (2000). *Social and emotional competence in the workplace*. In R. Bar-On & J. D. A. Parker (Eds), *Handbook of emotional intelligence: Theory, development, assessment, and application at home, school, and in the workplace* (pp. 433-458). San Francisco, CA: Jossey-Bass.
- Clore, G. L., Gasper, K., & Garvin, E. (2001). *Affect as Information*. In J. P. Forgas (Ed), *Handbook of affect and social cognition* (pp. 122-144). Mahwah, NJ: Lawrence Erlbaum Associates.
- Clore, G. L., Schwarz, N., & Conway, M. (1994). *Affective causes and consequences of social information processing*. In R. S. Wyer & T. K. Srull (Eds), *Handbook of social cognition* (2nd ed., Vol. 1.). Hillsdale, NJ: Lawrence Erlbaum Associates, pp. 323-417
- Cooper, R. K., and Sawaf, (1997) *A. Executive EQ: Emotional Intelligence in Leadership and Organizations*. New York: Berkeley Publishing Group
- Dijk, A. J. M., Koomen, W., van den Heuvel, H., & Frijda, N. H. (1996). *Perceived antecedents of emotional reactions in inter-ethnic relations*. *British Journal of Social Psychology*, 35(2), pp.313-329.
- Durbrow, E. H., (1999). *Child competence in developing communities: How rural Caribbean parents evaluate children*. In A. Masten and C. Nelson (Ed.) *Cultural processes in child development*, Minnesota Symposia in child psychology, Vol. 29, New York: Erlbaum, pp 97-121.
- Forgas, J. P., (1995). *Mood and judgment: The affect infusion model (AIM)*. *Psychological Bulletin*, 117(1), pp. 39-66.
- Freedman, Joshua., (2004, Nov 27). *EQ Reflection: Thanksgiving on Baghdad Street*, josh@6seconds.org
- Freeman, James., (1997), "The Growing Popularity of "Emotional Intelligence" Denison University, Peregrine Publishers, Inc
- Gardner, Murphy, Harper and Brothers., (1961). *Freeing Intelligence Through Teaching* New York, pp.34- 43.
- Goleman Daniel., (1995). *Emotional Intelligence*, Why It Can Matter More than IQ, New York, Bantam.
- Guilford, J.P., (1954) *Psychometric Methods* (2nd edn) IMC New York: Mc Graw Hill Company, p.14
- Harris, Irving. D. *Emotional Blocks to Learning, A Study of the Reasons For Failure in School*, New York: The Free Press, Collier, Mac-millan Ltd.
- Karen, F.Stone, & Harnold.Q. Dillehunt., (1978). *Self-Science*. Santa Monica: Goodyear Publishing Co.
- Kate Bedford and Jeni Mersman., *Real World Self-Science*, Teaching Social-Emotional Learning Transforms an At-Risk Classroom. Published by EQ Today.
- Lavin, D.E., (1967). *The Prediction of Academic Performance*, New York: Wiley Science Editions
- Lerner, M. J., & Simmons, C. H. (1966). The observer's reaction to the "innocent victim": Comparison or rejection? *Journal of Personality and social Psychology*, 4, pp.203-210
- Matthews, G., & Zeidner, M. (2000). *Emotional intelligence, adaptation to stressful encounters, and health outcomes*. In R. Bar-On & J. D. A. Parker (Eds.), *The handbook of emotional intelligence: Theory, development, assessment, and application at home, school, and in the workplace*, San Francisco, CA: Jossey-Bass, pp. 459-489.
- Michael, E. Akers and Groef, L.Porter., (2003) *Your EQ Skills: Got What it Takes. Professional Issues*. Online Publications. Journal of Accountancy. Online issues. March-2003
- Moore, Kristin, A and Lippman Laura., (2004) *What Do Children Need to Flourish?*, Conceptualizing and Measuring Indicators of Positive Development, E-book
- Rao, Ramachandra ., *Enhancing Emotional Intelligence in Classrooms*, CASE, Faculty of Education & Psychology, The M.S. University of Baroda, pp. 69-71
- Stein, S. J., and Book, H. E. (2000) *The EQ Edge: Emotional Intelligence and Your Success*. Toronto, Canada: Stoddard Publishing Co., Ltd.
- Weisinger, H. (1998) *Emotional Intelligence at Work*. San Francisco: Jossey-Bass
- Wechsler, D., (1940). *Nonintellective factors in general intelligence*. *Psychological Bulletin*, 37, pp. 444-445.
- Yong, M.S., *EQ for Innovative Thinking*, Department of Educational Psychology & Pedagogy, University of Malaya. ●



Two faces of educational development

Shalini Advani

Amidst the increasing clamour for a discourse on educational improvement, on budgetary allocations and retention rates, there is one crucial question which is insufficiently discussed. And the question is this: What is the purpose of education today? At various times, over the past 100 years, that question has been answered differently — in colonial India, the official answer would have been, "To create a cadre of clerks and officials to run the colonial state" while in a newly decolonised India, the official answer could be, "To create a nationalist sensibility and the national citizen."

Today, I suspect the official answer to the question about the purpose of education would be: "To give people jobs." Increasingly, the emphasis in education is towards vocationalisation and skills development. In a recent private conversation, the Education Minister of a north Indian State said, "We have a lot of jobs. We just don't have the people skilled enough to do them. We need bio-technologists, fitters, crane operators, nurses and lab assistants. But our education does not prepare young people for what we need. We need to change that."

Similarly, we find that the Confederation of Indian Industry is showing increasing interest in school education. The CII recently commissioned a study to look at the challenges and opportunities which face Indian industry, and this is its thesis: That in the year 2025, there will be about 40 million jobs worldwide, which need to be filled. India will be one of the few countries in the world to have a labour surplus of the right age group. It, therefore, believes that we need to think about the kinds of education system necessary to develop skills whereby our children will be best equipped to function in this scenario.

There are, in fact, already a number of powerful initiatives in rural education led by the private sector — an IT company working in 10,000 government primary and high schools, or a mobile network provider which has committed Rs. 200 crore to improve rural primary education. Government initiatives in vocational education plan a doubling of capacity in vocational schools including ITIs, and an increase in the number of Jan

A trajectory of vocationalised, instrumentalist education arises out of an increasing need for trained, skilled labour in the marketplace. In contrast, there is a broadly humanist, liberal vision of education which is deeply suspicious of the marketplace as the inevitable end-product.

Shiksha Sansthan to re-skill industrial workers.

Public consensus on the way to improve educational access is increasingly moving towards a public-private partnership. But we must be concerned about the terrible narrowness of the vision for educational improvement which characterises our discourse. Education, in this picture, is about the implanting of useful skills — the assumption being that it will ultimately lead to both personal and national enrichment. But as Martha Nussbaum writes, education is not simply a producer of wealth; it is a producer of citizens. Citizens in a democracy need, above all, freedom of mind — to learn to ask searching questions; to reject shoddy historical argument; to imagine alternative possibilities from a globalising, service and market-driven economy; to think what it might be like to be in other's shoes. Recently, the Israeli novelist, Amos Oz, spoke about the importance of reading novels as what he calls an antidote to hate. He said:

"I believe in literature as a bridge between peoples. I believe curiosity can be a moral quality. I believe imagining the other can be an antidote to fanaticism. Imagining the other will make you not only a better businessperson or a better lover but even a better person. Part of the tragedy between Jew and Arab is the inability of so many of us, Jews and Arabs, to imagine each other. Really imagine each other: the loves, the terrible fears, the anger, the passion. There is too much hostility between us, too little curiosity."

The skills and thought processes which engender the curiosity, the imagining, are associated with the humanities, the arts and

literature, and despite the splendid interventions in the NCERT's new textbooks for History and Political Science, these areas are terribly neglected. Our dominant conception of worthwhile education is increasingly technical and mechanistic. The thinking processes engendered by the social sciences are today seen as quaint, vaguely left-intellectual, a kind of quixotic idealism which has very little to do with the real business of life.

It is a strange irony that in the educational world of Gandhi, Tagore and Aurobindo, there are tragically few voices which assert a more holistic vision. One of the most consistent and eloquent reminders is found in the writing of Krishna Kumar and it is worth looking briefly at his newest book, *A Pedagogue's Romance*, to engage with this perspective on education for our national development. The book, like all his writing, engages with the role of education in the creation of a democratic and transformative space for all people, what he ironically calls a romantic ideal in contrast to the practical, instrumentalist planning which characterises much of our educational decision-making.

It outlines a space which asserts the claims of the rural over the urban, poor over the rich, the regional or Hindi language speaker over the English-speaking elite. It suggests that at its best, education can be transformative but warns that it is more often a process of disempowerment. The essential question he poses is how education planners can successfully combine the systems of educational policy with classroom practice to create reflective, independent learners in every village, every district town.

The book argues that "We need to guard against the wholesale sacrifice of the humanist concept of education for a cold instrumentalist substitute which promises quality control by focusing on outcomes, both pedagogic and social." The idea of "outcomes" in education has gained widespread acceptance across the world. It is a term which emerges from a productive, entrepreneurial economy where everything is a measurable outcome, even the extent and depth of learning. In many education systems around the world, outcomes already shape student assessment, teacher salary structures and measure the effectiveness of the learning programme.

So how do these two opposed notions of education relate to each other? The first — a trajectory of vocationalised, instrumentalist education arises out of an increasing need for trained, skilled labour in the marketplace and, at its best, plans to fit people for jobs, creating emancipation through the ability to earn. In contrast, there is a broadly humanist, liberal vision of education which is deeply suspicious of the marketplace as the inevitable end-product.

Krishna Kumar's voice is a messianic invocation of a better world. But is it really possible any longer, to halt the drum beat of globalised markets? And do we want to arrest it? I believe that we cannot halt the flood, and therefore the terrain for the education battle must shift to think about the ways in which we — an equip learners to productively engage with it, employing communities, historical understanding and a sense of empowerment.

We must not allow a creative, liberal education to be seen as an unfashionable, or dated notion, irrelevant for the aspirations which have already penetrated deep into the world of our rural and urban students. More than ever before, education has become an aspirational ideal — if we cannot demonstrate the relevance of our education so that it can both shape and fulfil these aspirations, the educational landscape will be hijacked by our new economic forces.

It has become increasingly important then to find the means to engage in a conversation between different value systems, if only to persuade a sceptical world that there is more than one route to empowerment. How do we find ways of bridging the traditional bifurcations between the world of the mind and the body? Between skill, which is essentially repetitive and imitative, and art, which is original and creative? Between manual labour and intellectual labour?

It is crucial for our framework of education to move more assertively to define this bridge and we need to identify the learning approaches which will incorporate this for all students. Let me venture two examples: the first is how we define creativity. If we look at the creative process, it is clear that it is not only about aesthetics or intuition or inspiration. It is also about working on, testing and refining an idea to shape it into a desirable end result. To do so requires skill in analysis and evaluation. The problem-tackling aspect of creativity means that we can encourage learners to work in groups to find creative solutions to problems, develop the skills of teamwork, and simultaneously promote reflection and independent thinking.

The second example relates to the ways in which electronic technology is used in schools and how it can be used by students to solve problems, exchange information, develop ideas and create models. An example that immediately comes to mind is the exercise where a group of street children used digital cameras to record their daily experience, creating an exhibition which became an essay in self-reflection.

Eventually, the future of education in India is not a question of access or literacy or teacher training — at whatever pace, these features will grow, simply to respond to a market demand. The issue is really about the soul of education and what we are doing to safeguard that.

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CARTOONSCAPE



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Action plan on climate change by 2008: Sibal

Special Correspondent

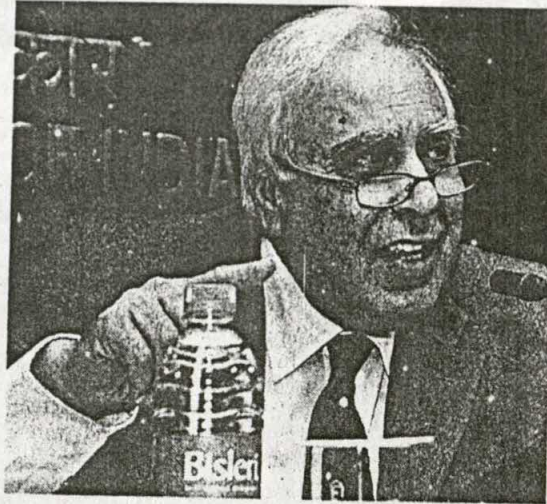
NEW DELHI: India's national action plan on mitigation of climate change will be ready by 2008 and will focus on industries shifting to a low-carbon economy.

Addressing a press conference here on Tuesday, Union Science and Technology Minister Kapil Sibal said India was committed to a reduction of greenhouse gases emission and the domestic road map was aimed at mitigating climate change. "However, we want to give more time to industry to shift to a low-carbon economy."

The action plan, being formulated at the prime ministerial level by a high-power council set up earlier this year, would ensure a sustainable India and give time to industry to adopt green technology.

To a question how the private sector would be brought on board to adhere to clean technology, Mr. Sibal said once discussions took place on transfer of technology, private companies would also be involved.

If India eradicated poverty, half the battle against global warming would be won.



SPELLS OUT PRIORITIES: Union Minister for Science & Technology Kapil Sibal interacts with media in New Delhi on Tuesday. - PHOTO: PTI

The coming two years would be hectic and crucial, till the next meeting of the United Nations Framework Convention on Climate Change (UNFCCC), he said. The national action plan would be in place whether or not the Bali conference was a success and whether or not the developed countries ratified the Kyoto Protocol.

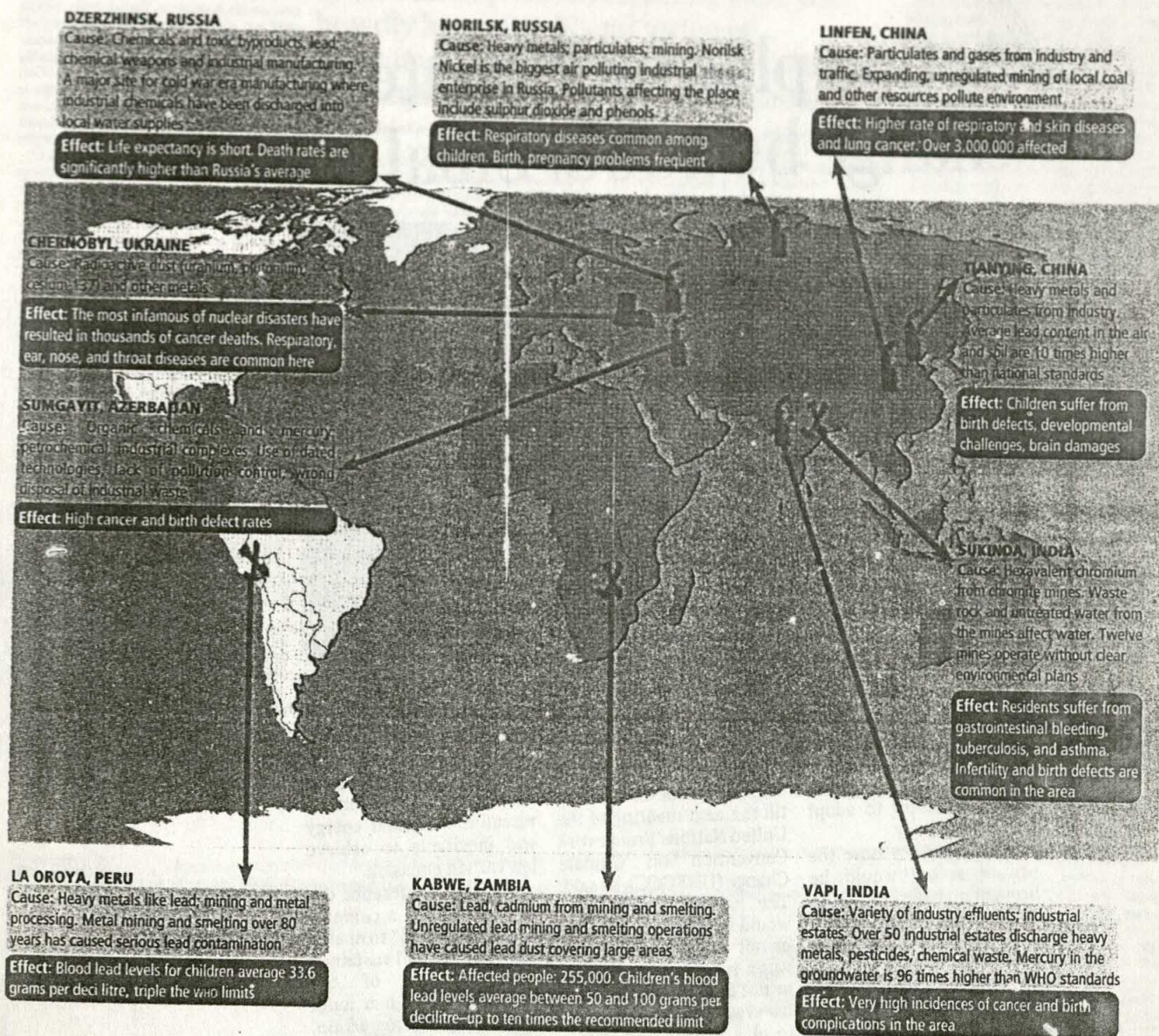
India was totally opposed to any kind of tariff barrier on trade and commerce.

During discussions, most developing countries agreed that nuclear energy was inevitable to achieve low carbon emission.

The Bali conference decided to launch a comprehensive "process" to enable full, effective and sustained implementation of the UNFCCC through a long-term cooperative action, now, up to and beyond 2012, in order to reach an agreed outcome and adopt a decision at its next session.

Black spots

US institute names developing nations in 10 worst polluted list; First World absent from top 30



■ The top 10 was selected from 400 severely polluted locations across globe. Linfen, La Oroya, Dzerzhinsk, Norilsk, Chernobyl and Kabwe were also part of the most polluted list last year as well. Vapi is a new entrant

■ Many of the highly polluted places are located near mining sites, petrochemical units, and industrial areas—Chita in Russia and Ust-Kamenogorsk in Kazakhstan, for example

In many such places, few measures are taken to check hazards. In Vapi, for example, some piecemeal actions have been taken by mining companies, but the scale of problems is said to be 'beyond the means'. In Dzerzhinsk in Russia, a few isolated efforts have been undertaken in individual villages but no major clean-up activities yet

Source: The world's worst polluted places, a project of the Blacksmith Institute, September 2007

Challenges to Global Warming

Sangram Keshari Mohanty, Baljinder Singh and Sunita
(NOIDA College of Physical Education, I-Block, Sector-22, NOIDA, UP)

Climate change is already affecting millions of people: many are forced to do the things that every one else should be doing to conserve forest, curtail excess use of water, and roll back pollution.

Climate change has occurred naturally in the past for the various reasons. We see that one year's winter is often different from the previous one. Environmentalists in India are so worried about it. In particular, they say that countries relatively poor should be particularly worried as climate impact changes are going to impact the poor in a cruel way. Their concern is shared by scientists around the world, who have been warning about the consequences of global warming for quite some time now.

Climate change can alter the local environment, in important ways, for e.g. by changing rainfall patterns or eroding coast lines. Higher temperature can also deplete snow packs and glaciers, which have been reliable sources of water. The Gangotri glacier in the Himalayas for example, is retreating at a speed of about 30 meters per year. If warming continues there will be excess water flowing in the rivers. But once this source begins to dry there may be dry periods resulting in very little water flowing down into life-giving rivers. It will be a scary scenario. As it is, many parts of India reel under the impact of drought every summer.

Sea level rise may have a physical impact on coastal areas and island states. India's long coast line of over 6000 kilometers is densely populated. Several million people may have impacted in India alone if the sea level rises by a meter. By the end of this century there will be a sea level rise of half a meter, according to the IPCC. Warmer temperatures could lead to immigrations of alpine forests to higher elevations in search of more moisture or cooler temperatures. This is already happening in Uttaranchal, points out Dr. T.P. Singh Former Forest Official. Warm and moist climate also result in the spread of vector borne diseases like malaria. Water borne diseases like diarrhea and cholera would also continue for longer periods affecting larger populations.

The rise in sea surface temperatures could also influence the distribution of marine fish species. If, in response to warmer ocean temperature, fish off the

coast of Andhra move north to Orissa waters, that would dramatically impact fishing communities in Southern state. The UN WRI'S (World Resources Index) 1988 figures out the Indian Ocean sector as the most densely populated coastal region in the World, with 135 persons per square kilometer. Large population along these coast lines depend on fishing for their livelihood and nutrition. In Southern India's Gulf of Mannar biosphere Reserve, 200,000 people a third of the population – earn their living directly from the sea.

Changes in temperature and rainfall patterns will directly affect agriculture and food security too. Countries like India whose economies are largely agriculture and heavily dependent on rainfall could be the worst affected. Almost two thirds of Indian agriculture is heavily dependent on natural factor such as rainfall. Millions in India would be affected if the cycle of rains got disrupted.

Developing countries that are battling population growth and poverty are the most vulnerable to the impacts of climate change. Ironically most developing economies are also heavily dependent on climate sensitive sectors like agriculture, forestry and fishing. Many of these countries are facing challenges of poverty, alleviation and economic growth. The growing impact of climate change will only aggravate their problems. Many of these nations are also in tropical nations like India, where minimum temperatures are already close to the limit of human tolerance levels. Even a small increase in temperature would be felt far more severely here than countries of temperate climate.

Climate change is already affecting the poor. Many communities are aware of the changes – going on around them, but usually they are powerless to stop the causes. For one thing, the national government has rarely responded their concerns of life and livelihood. But there is an even bigger problem: global warming and the changes it produces cannot be tackled by even the Indian government on its own; instead it requires collaborative action by all nations, something that has remained elusive so far. The Kyoto Protocol on managing global climate has been ignored by the United States, the World's larger consumers are polluter. And there is no sign of a meaningful alternative.

Climate change will lead to the melting of polar ice, changing weather patterns in complex ways causing events such as frequent storms, floods, invasion of sea water in upland low-lying islands. Other disastrous effects will be on biodiversity, changes on cropping patterns and rise of disease vectors. Even mountain glaciers are retreating dramatically in the non-polar regions and the global average sea level has risen between 0.1 and 0.2 meters during the 20th century. In addition, the number of heavy rainfall events has increased in the mid-latitudes in the northern hemisphere, while parts of Africa and Asia have experienced increases in the frequency and intensity of droughts.

Instrumental records of recent climate show that the global mean temperature has increased by 0.6 to 2 degrees Celsius over the last century. They also indicate that, globally the 1990's was very likely the warmest decade, while 1998 and 2001 were the warmest and second warmest years respectively since the start of the instrumental records in 1861. Since 1958 there has been a 17% increase in atmospheric CO₂ levels.

How it's Caused?

Climate change is said to be caused when there is a statistically significant variation in either the mean state of the climate or its variability, persisting for an extended period due to increasing emissions of greenhouse gases (GHG) such as carbon-dioxide, methane, nitrous oxide and chlorofluorocarbons. In simple terms, as these gases trap the solar heat within the earth's atmosphere, the earth's surface temperature increases, leading to change in the weather patterns and the earth's ecological balance. The concentration of atmospheric carbon dioxide in the atmosphere has increased by 31% since 1750 to a level which has not been exceeded during the past 420,000 years and most likely not even during the past 20 million years. This implies severe unforeseen changes resulting in massive all-round effects.

Some sources of greenhouse gases

- Fuel combustion
- Energy industries
- Manufacturing industries and construction
- Transportation
- Solid fuels
- Oil and natural gas

- Industrial process involving mineral products, chemical industries, metal production of halocarbons and sulphur hexafluoride.
- Agricultural processes such as enteric fermentation, manure management, rice cultivation, prescribed burning of savannas and field burning of agricultural residues
- Solid waste disposal on land, waste water handling and waste incineration.

Forest is Nature's Means of Absorbing Carbon Dioxide from the atmosphere and clearing up the air. But, deforestation in the last fifteen years has resulted in nearly 200 million hectares of forests being lost—that's almost half the size of India. As a result, a lot of the carbon dioxide that would have been taken up by plants is now in the atmosphere adding to the heating effect.

In 1998, El Niño caused massive coral bleaching, even in hitherto untouched atolls of the central Indian ocean. Besides worsening the effects of over-fishing, increasing the levels of toxicity in fish species and seriously undermining natural coral reef barriers to seasonal cyclones, bleaching directly impacts 90 per cent of the traditional artisan fishing communities which rely on harvesting near shore reef-related fisheries and seaweed resources.

Coal-burning power plants, the first largest source of carbon dioxide pollution nearly 2.5 billion tons every year. Automobiles, the second largest source, create nearly 1.5 billion tons of CO₂ annually.

Climate change can take place due to either natural processes or persistent anthropogenic (man-made) changes. The earth's climate is controlled by the balance of energy from the sun and the amount of energy it releases back to space. Causes of climate change involve any process that can alter this global energy balance. There are two processes external and internal that force the climate to change. External processes take place outside the earth and include changes in the earth's orbit around the sun, or in the amount of energy the sun emits. Internal processes occur within the earth's climate system involving oceans, atmosphere and biosphere etc. and include change in the global energy balance due to changes in the composition of the atmosphere or ocean circulation.

What Needs to be Done to Stop It?

It's simple: By reducing pollution from vehicles

and power plants. Right away, we should put existing technologies for building cleaner vehicles and more modern electricity generators into wide spread use. We can increase our reliance on renewable energy sources such as wind, sun and geothermal, And we can manufacture more efficient appliances and conserve energy.

Because, while the technologies exist, the corporate and political will to put them into widespread use does not from requiring catalytic converters to improving gas mileage, automobile companies have fought even the smallest measure to protect public health and the environment.

Yes, first we must use more efficient appliances and equipment in our homes and offices to reduce our electricity needs. We can also phase out the decades-old, coal-burning power plants that generate most of our electricity and replace them with cleaner plants. And we can increase our use of renewable energy sources such as wind and sun.

Cost-effective technologies to reduce global warming pollution from vehicle of all sizes are available now. There is no reason to wait and hope that hydrogen fuel cell vehicles will solve the problem in the future. Hybrid gas electric engines can cut global warming pollution by one-third or more today; hybrid sedans, suvs and trucks from several automakers are already on the market. But automakers should be doing a lot more.

What local communities can do, meanwhile, has become more adept at responding to the changes to protect coastal areas with forests, manage water resources prudently, improve drought and disaster management, and design programmes that will address development issues without serious ecological footprint. And some of this is already happening, out of necessity, if not of foresight.

- In Gujarat, thousands of forest protection committees formed by villagers has worked with the forest department to restore denuded forests.
- Traditional water harvesting practice is slowly helping farmers battle the grim realities of long-term drought. In Madhya Pradesh, a water conservation movement spread over 51,000 villages has gradually transformed a barren landscape giving former a new hope. Such traditional practices can bloom if governments and modern institutions blend it with science. A macro approach is essential to

tackle such challenges.

- In Maharashtra, villagers have formed informed water councils to regulate management and distribution. Their philosophy is simple: All farmers get the same quantity of water irrespective of the size of their farms. To save water, villages have banned water intensive crops like sugarcane. Again, the logic is to adapt to changing patterns of climate.
- For many decades, people in Sunderbans in west Bengal coped without electricity, relying instead on wood-lit fires and noxious kerosene lamps. But now, aided by the government, villagers are using renewable energies like solar, wind and biomass to light up their homes and lives,
- Firozabad, near Agra has a huge number of glass factories mainly working with coal based furnaces that were heavily polluting the atmosphere. But now, the units are rapidly shifting to cleaner fuels like gas.

These changes are a small beginning. Reducing greenhouse gas emissions is one of the mankind's toughest challenges today. Without partnership that involve both the developed and developing countries, this is not going to happen easily. Developed countries processing technologies for cleaner production would do well to transfer these at affordable process to poor countries. The economic transition that can lift people above the poverty line has to be accomplished without the large-scale pollution through the use of cleaner technologies. Moving from fossil fuels to renewable energy is one answer. Countries will have to move towards renewable technologies and harness the power of the sun and the wind.

Climate change is also increasingly becoming a more political battle between the rich and poor countries, as well as between the rich and poor citizens within nations. India, for example, has argued that rich nations—which are responsible for most of the pollution, and whose development was made possible by consuming fossil fuels—should take the lead in cutting their use of fossil fuels. But this is a logic that is not applied within India itself. Here, poor communities continue to be disadvantaged by the consumption of the rich and increased consumption itself is offered as the only hope for millions to rise out of poverty.

But the ministry of Non-conventional Energy sources seems to have directed all its efforts and attention at technological innovations of the multinationals

and nothing at all at understanding the social and cultural pattern that influence a community is response to new technologies. The ministry itself has identified some critical factors in the way of quicker expansion: high initial cost; low perceived reliability; lack of a market environment lack of level playing field; and failure to stabilize technology.

A case in point : Energy Developments Limited (EDL), an Australian multinational company along with Bright Star Sinful Corporation have signed or are negotiating more than half a dozen Resource Incineration Projects in several Indian cities like Mumbai, Jaipur, Kanpur, Bhopal and Lucknow. Even though its Solid Waste Energy Recycling facility (SWERF) project in Delhi and Chennai have been stopped following the detection of its polluting nature by the respective State pollution control Boards, the group is promoting waste incinerations and incineration

process such as gasification and pyrolysis.

India already has the experience of costly failure of such a non-renewable energy project in Timarpur and Delhi where the plant ran for just seven days and the Indian government lost crores of rupees to Danish company in litigation. The Delhi High court has asked the comptroller Auditor General to investigate the deal in which it has been alleged that some allowing ourselves to be misled by the incinerator technology promoters.

Sustainable solution of urban waste management must be appropriate in their very nature and sensitive to livelihood issues and involve communities. What is needed is a comprehensive approach entailing a packaging material policy, industry driven schemes and recycling with support to the waste pickers sector, and decentralized community based waste management programs. □

How important are the Climate Changes in a longer-term context?

Paleoclimatic data are critical for enabling us to extend our knowledge of climatic variability beyond what is measured by modern instruments. Many natural phenomena are climate dependent (such as the growth rate of a tree for example), and as such, provide natural 'archives' of climate information. Some useful paleoclimate data can be found in sources as diverse as tree rings, ice cores, corals, lake sediments (including fossil insects and pollen data), speleothems (stalactites etc), and ocean sediments. Some of these, including ice cores and tree rings provide us also with a chronology due the nature of how they are formed, and so high resolution climate reconstruction is possible in these cases. However, there is not a comprehensive 'network' of paleoclimate data as there is with instrumental coverage, so global climate reconstructions are often difficult to obtain. Nevertheless, combining different types of paleoclimate records enables us to gain a near-global picture of climate changes in the past. Large and rapid climatic changes affecting the atmospheric and oceanic circulation and temperature, and the hydrological cycle, occurred during the last ice age and during the transition towards the present Holocene period (which began about 10,000 years ago). Based on the incomplete evidence available, the projected change of 3 to 7°F (1.5 - 4°C) over the next century would be unprecedented in comparison with the best available records from the last several thousand years.

Climate change could increase tensions

Indian subcontinent listed as a potential hotspot: report

Priscilla Jebaraj

MUSA DUA (BALI): Even as the Nobel Peace Prize was presented to Al Gore and the Intergovernmental Panel on Climate Change on Monday, the U.N. agency which is the "father of the IPCC" released a new report explaining why "climate change mitigation policy is a policy for peace."

Resources shortage

Climate change could exacerbate tensions and trigger conflicts across the world by worsening food, water and land resource shortages and increasing the number of environmental refugees, according to "Climate Change as a Security Risk," a new report released by the U.N. Environment Programme and the German Advisory Council on Global Change at the ongoing conference of the U.N. Framework Convention on Climate Change in Bali.

Glacial retreat

The Indian subcontinent is listed as a potential hotspot, along with African regions, including the troubled Darfur area, central Asia, China and the Andes and Amazon regions of South America.

"Glacial retreat in the Himalayas will jeopardise the water supply for millions of people, changes to the annual monsoon will affect agriculture and sea-level rises and cyclones will threaten human settlements around the populous Bay of Bengal," said the report, pointing out that these dynamics could increase the crisis potential of a region already faced with unstable governments in Bangladesh and Pakistan, as well as several cross-border conflicts.

"If people are displaced by sea level rise in South Asia,

• **Glacial retreat in the Himalayas will jeopardise water supply for millions**

• **Melting of Himalayan glaciers will put immense pressure on the Gangetic system**

millions could be forced to migrate. And where will they go?" asked UNEP executive director Achim Steiner.

While recognising the devastating impact of climate change on the region, sources in the Indian delegation downplayed the linkage to conflict, pointing out that there was a world of difference between any threat to international security and the clear need for risk management.

The Indian position is that there are huge risks being created, and vulnerabilities that need to be dealt with, but they would not reach the point where conflicts result.

Risks are huge

India's neighbours also feel that the risks are huge. A senior official of the Bangladesh delegation pointed out that the recent cyclonic floods that devastated his low-lying nation were proof that adaptation was critical.

Entire coastal communities in the Bay of Bengal along both sides of the border are being affected by climate change impacts such as sea level rise and climate disasters, and they will be forced to migrate inland in large numbers, he said.

Immense pressure

Meanwhile, a member of Nepal's delegation said the melting of the Himalayan glaciers would put immense pressure on the Gangetic river system and expressed Kathmandu's concern that

India's plans to link its rivers would aggravate problems.

"This is not a prediction that the world will end up in flames," clarified Mr. Steiner. "In trying to link climate change and security, we are not laying out an inevitable path, but we are trying to help countries understand the linkages and be prepared to deal with conflict situations."

Development

India agrees that being prepared is a key to successful risk management, and feels that rapid development is essential to such preparedness.

There is no doubt that in the next 20 years, we need the wherewithal to cope with these risks, said sources in the Indian delegation, pointing out that this is the reason India is arguing against any binding emission-reduction commitments that can affect its developmental goals.

South Asian delegates felt that working together to achieve development throughout the region could help.

Declaration hailed

Delegates from both India and Bangladesh welcomed last week's SAARC joint declaration on climate change in New Delhi.

As the U.N. Environment Programme report points out, while climate change can trigger conflicts, it can also unite global communities which recognise a common threat and work toward common goals.

18-12-07-IE

Climate change may lead to spurt in malaria cases

By D. SURESH KUMAR

Chennai, Dec 17 : The climate change caused by global warming could expose a whopping 22 to 40 crore people worldwide to malaria. Besides, by 2080, a population of 15 to 35 lakh faces the threat of being afflicted by dengue.

These are some of the alarming projections on the health front made by the Inter-governmental Panel on Climate Change (IPCC) headed by Rajendra Pachauri, who received the Nobel Peace Prize this year for the report on global warming and climate change.

The United Nations Human Development Report (UNDP 2007-08) quotes the Pachauri report and warns: "Increased rain, even in short downpours, warmer temperatures and humidity create a 'perfect storm' for the spread of the

plasmodium parasite that causes malaria. Rising temperatures can extend the range and elevation of mosquito populations, as well as halving incubation periods. More disconcerting still is the seasonal transmission period may also increase, effectively increasing the average per capita exposure to malarial infection by 16-28 percent."

Currently, malaria claims around 10 lakh lives annually, of which over 90 percent of them are in Africa, making it the third largest killer of children. Malaria would have a crippling effect on the livelihood of patients as "it robs people of opportunities in education, employment and production, and forces people to spend their limited resources on palliative treatment."

Likewise, latitudinal expansion

linked to climate change could put the population at risk of dengue, which could prove fatal. Dengue fever is already in evidence at higher elevations in previously dengue-free areas of Latin America. In Indonesia, warmer temperatures have led to the mutation of the dengue virus, leading to an increase in fatalities during rainy season.

The other health-related projection made by the IPCC is that summer heat-related mortality could increase 55 percent by the 2020s, more than double by 2050s and triple by 2080s.

Climate change could also contribute indirectly to the increased incidence of vector-borne diseases and malaria, wider prevalence of water-borne disease organisms and increased photochemical air pollution.

Climate change: India's policy hotchpotch

BY DR H.N. SHARAN

It will not be easy for industrialised countries to manage the very difficult psychological process of "giving up," i.e., to reduce their per capita emissions down to the sustainable convergence target discussed yesterday. For developing countries, especially India, the task of managing a switch to a sustainable development path will be even more complex and difficult. Providing a minimum level of food, drinking water, health and education to hundreds of millions of poor people requires an enormous growth in infrastructure, especially energy supply and services.

When these requirements are added to the demands of liberalisation and globalisation which are pushing millions of Indians and Chinese towards western lifestyles of over-consumption and wastage, the problem becomes truly gigantic.

The adrenalin of growth generates dreams of becoming a superpower, and politicians, financiers, industrialists, scientists and technocrats lose sight of the national goal of reducing poverty, let alone the task of mitigating climate change, both of which are problems that are harming India immensely. It seems that politicians and policy-makers are either unaware of, or are knowingly ignoring, the strong linkage that exists between the problems of poverty reduction, energy supply and prevention of climate change. Otherwise, how does one explain the current hotchpotch of policies, priorities and actions of the governments at the Central and state levels?

Energy policies are at the centre of it all, but they are not everything. Coal is the backbone of India's electricity grid, and at the same time, the most intensive polluter and carbon emitter of all sources of energy. And yet, India's efforts to introduce cleaner coal technologies and reduced carbon intensity of the economy are minuscule, compared to the time, effort and energy spent by top politicians, bureaucrats and scientists on securing nuclear energy for civilian use.



The adrenalin of growth generates dreams of becoming a superpower, and politicians, financiers, industrialists, scientists and technocrats lose sight of the national goal of reducing poverty, let alone the task of mitigating climate change, both of which are problems that are harming India immensely

Even accepting the less than transparent assumptions about nuclear electricity's economic viability and the long-term management of highly hazardous wastes, it is doubtful that nuclear electricity's contribution to the national energy mix will exceed that of the lowly cow dung and other rural residues during the next few decades.

The case for achieving energy security and reducing the emission of greenhouse gases by replacing one's own dirty coal with imported, politically charged, hazardous uranium, over whose supplies and prices India will have no control, appears dubious. Nuclear energy should stay on as a source of strategic power, rather than electric power, and the focus should shift to integrated and doable energy solutions for solving the three most critical problems facing the country.

And this is the problem: The inability of the policy-makers to see that current centralised solutions advocated by Central planners and multinational free-marketers alike are propelling India into dangerous dead-ends. The fact is that the cost of creating new jobs in these mega-projects is simply unaf-

fordable, and their huge ecological footprint too dangerous. Everyone accepts that poverty can only be reduced by creating rural jobs, but it cannot be done on the required scale without electricity.

So what does the government do? It starts handing out "fish" in the form of subsidies, rather than "fishing rods" in the form of investments which can create sustainable livelihoods. It simply does not want to choose, or put its money where its mouth is, or help the rural and agricultural classes in the same way as it helps capital. In theory, the previous and present Central governments talk about village energy security schemes, but in practice they hand over land, tax-breaks and subsidies to mega projects rather than to small village projects which can create millions of jobs at lakhs rather than crores per job. It overlooks the big opportunity for entering a new era of a sustainable global politics:

There are today new alliances at all levels of society lobbying for global emission reductions simultaneously with action for poverty reduction. These are not just dreamers or feminists or environmentalists. These are serious leaders across the whole spectrum of parties, pres-

sure groups and successful activists. Do the government of India and politicians not realise that there is an opportunity here for leadership? CDM funds and equity at home and from abroad are available to build rural infrastructure and create jobs based on decentralised power and process energy plants using renewable energy. For once, let the government of India believe its own rhetoric: There are win-win solutions which can reduce poverty and the carbon intensity of the Indian economy simultaneously.

In transportation too, old mindsets are wreaking havoc. The Indian government seems to have unconditionally accepted the role of automobiles, trucks and airlines as the major motors of economic growth. There are no limits on size, consumption or emissions of the vehicles: On the contrary, an incentive in the form of reduced taxes is again planned for promoting larger vehicles.

That there are no roads for the vehicles appears not to be of major concern. The railways are being upgraded, but low pollution urban public transportation systems are being built at a snail's pace in only a few large cities. Their role is not being seen for what it is: the solution to excessive

emissions from road and air transport.

Clogging of airports and increasing greenhouse gas emissions from numerous cheap flights are accepted as a part of the process of globalisation and the new lifestyle of the rich.

In short, even though there is still time for a major change, there is no coherent plan for creating a sustainable transportation sector in India which can cater to the rich and the poor with the minimum impact on the climate.

Many more examples of our hotchpotch policies that propel India on the path of unsustainable growth can be cited. Why are China and India striding along this discredited path just when the industrialised countries are being forced to stop and change direction by the forces of nature? Fortunately, India is still only at the beginning of this unsustainable journey, and has time to pause and listen to its agricultural labourers, its workers, its environmentalists, feminists and activists, and to its own history of detachment and abstinence; to build a liveable country which is also equitable and fair to rich and poor.

But where are the politicians who have the courage of their convictions to introduce such major changes and the perseverance to work for bringing about a national consensus across party lines in a democratic set up? Where are the business leaders who have the patience and lack of greed to wait for profits from economically, socially and ecologically viable projects? Where are the thinkers, scientists and engineers who forcefully present alternate solutions for creating jobs, promoting equitable and sustainable development, maintaining a low carbon economy and reducing population growth without worrying about their own status and positions?

It will be a hard job even for a new Gandhi.

Concluded

■ DR H.N. SHARAN, Chairman of DESI Power, Bangalore, is an energy expert and a sustainable development activist building EmPower Partnership Projects in Indian villages

13-12-07H

Climate change: talks for post-2012 accord stalled

United Nations Convention delegates disagree on basic reference points

Priscilla Jebaraj

NUSA DUA (BALI): Calling climate change "the moral challenge of our generation," United Nations Secretary-General Ban Ki-moon told ministers and delegates at the U.N. Framework Convention on Climate Change here that the eyes of the world were on them as they decided the future shape of the global fight against climate change.

However, talks to launch negotiations for a post-2012 agreement stalled on Wednesday as delegates disagreed on the basic reference points for any such agreement and what it should contain. The first commitment period of the UNFCCC's Kyoto Protocol, which mandates just over five per cent cuts in the greenhouse gas emissions of industrialised nations, expires in 2012.

Scientific evidence

Negotiators, trying to forge a "Bali Roadmap" to launch negotiations, wrangled over whether to mention scientific evidence of the need for emissions cut in the range of 25-40 per cent below the 1990 levels by 2020 as part of the guidelines for the talks. While the European Union, supported by most developing nations, is aggressively pushing for the target range to be included in the text, it is being opposed by the U.S., Canada, Japan and Australia, which say any mention of numbers will prejudice the negotiations.



FOR A BETTER FUTURE: Australia's Prime Minister Kevin Rudd (left) hands over the instrument of ratification of the Kyoto Protocol by his country to U.N. Secretary-General Ban Ki-moon in Nusa Dua, Bali, on Wednesday. - PHOTO: AFP

Faced with such opposition, Mr. Ban warned that it might be too ambitious to agree on such target guidelines at this conference. "Practically speaking, this will have to be negotiated down the road," he said, adding what was important now was to launch formal negotiations immediately with a 2009 deadline. He emphasised that any new deal must be comprehensive, involving all nations.

Developing countries are reading his statement and

similar statements by developed countries to mean that the pressure to bring on board the world's largest greenhouse gas emitter, the United States, could lead to compromise. That could even include a new agreement that abandons the Kyoto Protocol.

India's concern

"We are concerned at the attempts to create a new framework, which may result in the dilution of specific and time-bound commitments on emission reductions by devel-

oped countries. This should not be allowed to happen," said Kapil Sibal, Union Minister for Science and Technology.

His view was echoed by the leader of the Pakistani delegation Munir Akram, who also represents the Group of 77 developing nations and China at the summit. The talks "should not result in the erosion of the Convention or the Kyoto Protocol or the replacement of these by a less equitable instrument," he warned, reiterating that the

UNFCCC and its Kyoto Protocol remained the central multilateral framework for cooperative action to address climate change. Brazil and several other developing countries expressed similar concerns.

Portuguese Environment Minister Francisco Nunes Correia, who is also representing the European Union, reiterated the group's support for the UNFCCC, but refused to categorically state that the post-2012 agreement would be within the Kyoto Protocol's framework.

The developing nations want to stick to the Protocol's formula in any post-2012 deal: mandatory emission cuts only for the developed nations, with the developing economies expected to contribute in other ways. "They [developed countries] are not able to meet their commitments, so they want to wangle out of it by proposing a new deal," said an Indian negotiator.

In an effort to break the deadlock on these issues, as well as on clean technology transfers and capacity building efforts, the conference host Indonesia convened an informal meeting with a group of about 40 influential nations, including India. These discussions will determine whether the Bali Roadmap, which will be announced at the end of the conference on Friday, produces a clear agenda for the future.

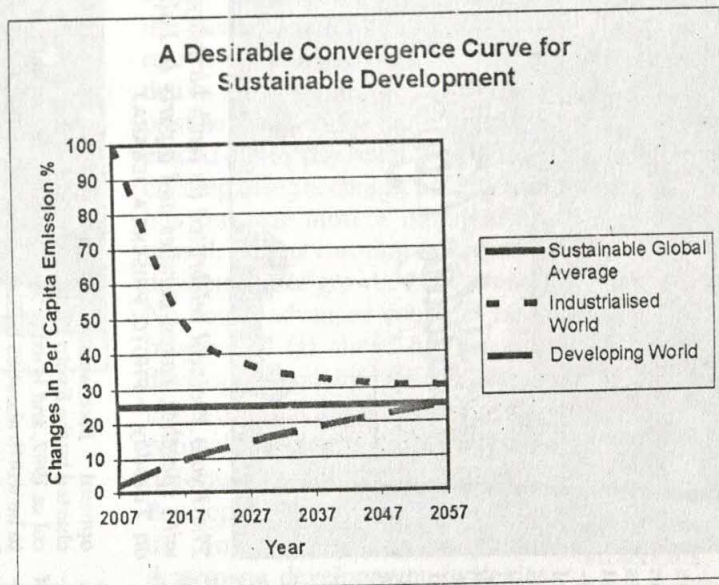
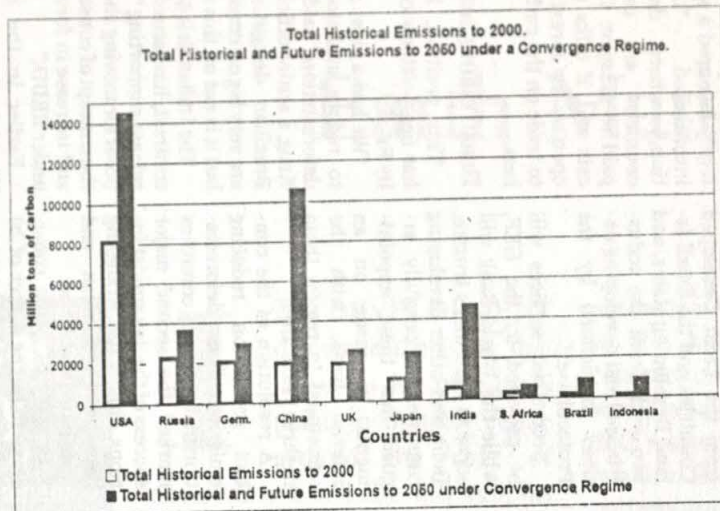
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Climate of Confusion

BY DR H.N. SHARAN

Ever since the Rio conference, the environmental rhetoric has steadily escalated and today we are overwhelmed by PR gurus with mandates to get politicians re-elected on a soft environmental ticket and protect profits of multinationals without damaging their environmental credentials. In that process, pin-pointing over-consumption — undoubtedly, one of the primary drivers of climate crisis — continues to be taboo. Looking at per capita energy consumption, per capita GDP and per capita emission of greenhouse gases, one does not have to be an Einstein to see the linkage. Yet, not only politicians and business leaders, but the popular media, too, continue to advocate consumption as the motor of growth, job protection and profits, as the entire industrialised world focuses on technology solutions, energy saving, fuel switch, renewable energy etc., as the panacea. The problem, both real and in terms of the language of the debate, is exacerbated by the forces of globalisation, as millions of Indians and Chinese adopt westernised lifestyles and the ideologies of consumer-led growth. Recent changes in India and China clearly show that the problem is no longer between the industrialised North and the developing South, but between rich and poor wherever they are; between the millions driving SUVs and the billions who still have no access to sufficient food, energy, health services or clean drinking water.

To reduce the emissions of greenhouse gases, the attack from the industrialised countries seems to have shifted to future emissions. Even the *Guardian* recently led with a story about China overtaking the United States in total emissions, quietly ignoring per capita emissions which are still much lower in China, and more importantly, ignoring historical emissions for which the US and Europe are responsible; and the consequences of which we are already suffering today. In fact, if we assume that all countries reduce emission equitably and converge towards near-



	2007	2017	2027	2037	2047	2057
Industrialised World	100	50	36.9	33	31.2	30.5
Developing World	2	10	15	19.7	22	25
Sustainable Average	25	25	25	25	25	25

ly equal per capita emissions by 2050, then the US and Europe will still remain the leading emitters till 2050.

The politics of climate change today is as it always was: The US and Europe and the rest of the industrialised world must reduce their per capita consumption and their emissions in order to leave billions of poor people in the developing world including China and India the emission space to come up to a minimally acceptable level of development.

As the Conference of the Parties to the Climate Con-

vention began negotiating the post-2012 commitments in Bali, the question was whether the industrialised countries could commit to introducing those much needed policies to reduce their energy consumption. This they have not yet done. The new UNDP Human Development Report 2007 prescribes many of the policies already described in detail in the most recent Intergovernmental Panel on Climate Change (IPCC) report. Ecological tax reform is a prerequisite to natural resource conservation, sustainable systems

and equal rights. As UNDP and IPCC make it clear, the framework for these changes is a commitment to an overall contraction of emissions by 80 per cent and a convergence of per capita emissions, ideally by 2050. A modified cap and trade system like the current clean development mechanism forces any country that emits more than what it is permitted under its cap for that year, to buy its emission space from those who are below their limit. Emission trading can continue to help all countries become sustainable faster within

these tight targets and timetables.

Bringing about major changes in lifestyles while at the same time maintaining jobs and profits will undoubtedly be a painful process and will take a few generations to achieve. Unless a start is made now, however, to create a framework of legal and fiscal ground rules which can force a reduction of consumption, climate catastrophe cannot be avoided. Politicians who introduce these fiscal and other reforms will need a great deal of courage. This they have hitherto conspicuously lacked. In a democratic set-up dominated by lobbies and interest groups, it takes conviction, courage and perseverance to reach a national consensus across party lines. The first who are again being called upon to show such courage were the decision makers in Bali. We know that most of them would have gone to Bali with the limits of their mandate already spelled out. But the momentum of the negotiations if entered into in a spirit of cooperation could have nonetheless thrown up surprising and progressive results, which has unfortunately not happened.

The problems of managing the change in developing countries is equally complex, but different. The mantra of all politicians is improving living conditions, but the lure of money and power that has always corrupted the hearts of politicians, is massively escalated by the process of globalisation. Creating jobs, promoting equitable and sustainable development, maintaining a low carbon economy and reducing population growth is a tall order for any country. Most politicians in developing countries are just happy that the economy is growing. They want to see the US, Europe, Australia and others change their priorities and politics around before they too are convinced it is doable.

More tomorrow on the Indian case.

To be continued

■ DR H.N. SHARAN, Chairman of DESI Power, Bangalore, is an energy expert and a sustainable development activist building EmPower Partnership Projects in Indian villages

Consensus reached at climate change meet

Adaptation Fund and REDD designed to help developing countries deal with the impact

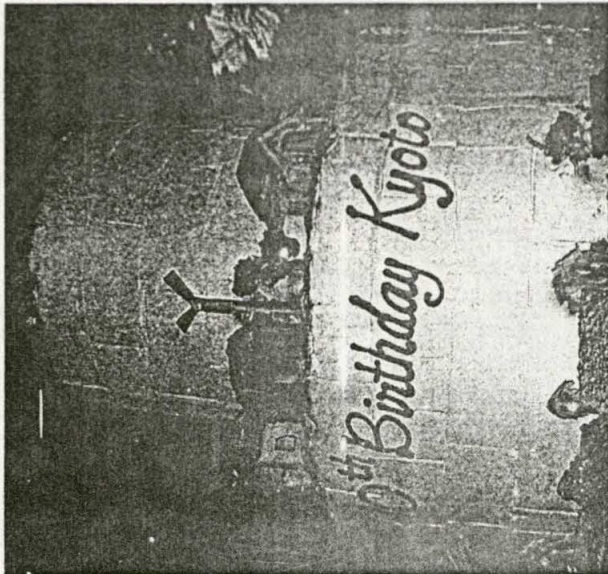
Aman Sethi and
Priscilla Jebaraj

NUSA DUA (BALI): As negotiations at the U.N. Climate Change conference gathered critical momentum ahead of ministerial talks on Wednesday, delegates claimed to have arrived at consensus on two major issues: the Reduction of Emissions from Deforestation and Degradation in developing countries (REDD), and the stewardship of the Adaptation Fund designed to help developing countries deal with the impact of climate change.

"Mitigation is finally beginning to pay for adaptation," said UNFCCC Executive Secretary Yvo de Boer, adding that donors would be able to put their adaptation money within the Convention framework, rather than outside it.

"Critical outcome"

Flagged as a "critical outcome" at the beginning of the conference, the resolution on the Adaptation Fund marked the first real progress on the so-called Bali Roadmap. Valued currently at \$67 million, the Fund is financed by a two per cent levy on transactions on the Clean Development



The Kyoto Protocol celebrated its tenth birthday, with speeches, cakes, candles and a party in Bali on Tuesday. - PHOTO: PRISCILLA JEBARAJ

Mechanism as charted by the Kyoto Protocol of 1997, and is expected to be worth about \$5 billion by the end of the first period of commitments in 2012. However, disbursement of the Fund's resources had been stalled over quarrels regarding its administration. A major point of contention

was the "one country-one vote" that developing countries felt would not be reflected if the Fund was managed by the Global Environment Facility (GEF) — an international financial body supported by the World Bank.

As per the resolution, the Fund will be administered by its own Board, which will

have 16 members from parties to the Kyoto Protocol, with two representatives from each of the five U.N. regional groups, one each from the Least Developed Countries and the Small Island Developing states, and two each from the industrialised and developed nations as defined by the Protocol itself.

Secretariat services will be provided by the GEF, while the World Bank will serve as the Fund's trustee. India and other developing countries successfully argued that these appointments be made on an interim basis, with the agreement to review them in three years' time.

A resolution of the contact group on reducing emissions from deforestation in developing countries marked the second major success of the day amidst furious diplomatic wrangling between the Indian and Brazilian delegations.

In spite of being considered to be the source of 20 per cent of global greenhouse gas emissions, deforestation has consistently evaded resolution due to the seemingly intractable concerns of various countries. The basic idea behind the REDD framework is to pro-

vide countries with resources to combat deforestation and thereby limit its impact on climate change. The Indian stand point has consistently favoured a system of incentivised "conservation," where developing countries are essentially paid to preserve their forests and, if talks progress, open up the forestry sector to trade on the carbon markets.

Brazil claims mandate

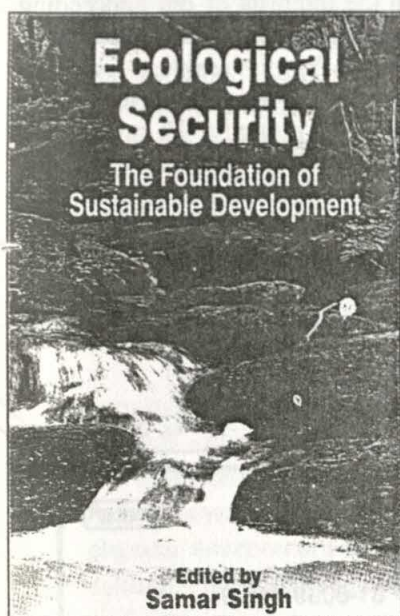
This position, however, has been bitterly contested by Brazil.

"We had a clear mandate to reduce emissions from deforestation," said Thelma Krug, a senior official of the Brazilian delegation. "We are very big on conservation but it is not on this agenda."

The Indian delegation, by contrast, has issued a press release supporting "the proposal for moving ahead with the concept of conservation, and increase in forest cover under REDD."

Earlier in the day, the World Bank announced its own Forest Carbon Partnership under the UN framework to provide developing countries with financial incentives to protect and replant their forests.

Earth Matters



TITLE : ECOLOGICAL SECURITY:
THE FOUNDATION OF
SUSTAINABLE DEVELOPMENT

Author : Samar Singh
Pages : 208
Price : Rs. 495/-

Publisher : Shipra Publications for
India International
Centre, New Delhi

IN DEVELOPMENT discourse the issue that crops up for polemical points indubitably centre around the role of environment and the life support system that it bolsters for preserving the planet's capacity to sustain and rejuvenate. It is common knowledge that in the name of development, the pristine purity of the earth is getting eroded day by day because of the all-encompassing economic activity that has but one motive of ensuring growth without ensuring the requisite desideratum of growth to what end? No doubt, advanced countries have progressed far ahead of the poor developing countries in the past in terms of extracting and wresting the optimal results out of the planet. Now, unfortunately, it falls on the lot of developing countries to see that they do not pursue similar planet destroying development strategies that not only put into jeopardy their natural resource endowments but also subject their poor and tribal population in certain pockets to displacement and countless miseries.

The book under review is an apt response to the dilemma confronting developing countries as they go ahead in their relentless march to banish poverty and ill-health in their midst. The book weighs the pros and cons of development strategies and

put the issue in proper perspective. If in the name of development, countries of continental size like ours would resort to over-exploitation of their resources such as water, forest produce, flora and fauna, this would tantamount to self-destructing proclivity for the long-term health and wealth of their population.

The retired officer from Indian Administrative Service, Mrs. Samar Singh took the initiative to bring together eminent public figures to set forth their views on ecological security and the need to conserve the gift of nature so abundantly bestowed on humankind. The very first piece by Dr. Amrita Patil, Chairman Foundation for Ecological Security and National Dairy Development Board makes a forcible plea for the need to factor environmental considerations in development strategies. Rightly she defines ecological security as "maintaining the natural integrity, and in a state of stability, as far as present circumstances can possibly permit, the optimum functioning of the vital processes of Nature's Biological Systems that sustain the myriad life forms". In Ms. Patil's definition of life forms cover plant and animal, both micro and macro, which through their symbiotic relationship, complementary interaction and adaptation to their abiotic

environment over millions of years, have thus far supported the evolution of all life on earth, and not the least human. "It is in this matrix of interlocking biotic and abiotic forms, in their totality, that constitutes the critical biological foundations of life on earth".

She rightly regrets overuse and exhaustion of water bodies, forests, productive fishing streams and rivers and once rich pastures which were once, some still are in places, governed by communities whose rules of access allowed rational and renewable use of the living natural bounties. This trend has resulted in "a growing struggle over the commons where the power of money, both foreign and Indian, prevails regardless of the consequences to those unable to protect themselves, much less their rights". To compound the woes, "we are being swept off our cultural bearings by the tidal wave of today's modes of market economy which promotes crass and totally unsustainable consumerism that is

wrecking our ecology and progressively our economy", Ms. Patil bemoans. Pleading passionately for an alternative and sustainable development entailing primarily ethical shifts, she asserts "they are a shift in values such that Nature is valued in herself, for her life support functions, not merely for how she can be converted into resources, raw materials and commodities to feed the engine of economic growth".

Ms. Patel pleads for ecological security by reverting to our roots and desisting from plunging headlong into mindless exploitation of nature to splurge on our conspicuous consumption. But, the Minister of State for Commerce Mr. Jairam Ramesh has in his paper cautioned against turning the environment/ecological security into an instrument of protectionism. He remarks that if ecological security is going to be used as a criteria for restricting market access and for actually making free trade un-free, then we would be

denying to many countries the benefits of the globalisation process. He rightly argues that the ecological security really is a matter ultimately of domestic policy, economic policy, agriculture policy, of how "you deal with air, water and land".

The book is peppered with wise words of wisdom emanating from experts on environment, development and religion to drive home the truth that eventually the clincher is 'simple living and high thinking'. It is in our interests and in the interests of our succeeding generation that we do not denude Nature by our reckless living of today as it is fraught with regrettable years for posterity. We owe a duty to posterity, as we were the beneficiaries of our ancestors in that they showed the way for living without ravaging the ravishing beauty of earth and the pristine purity of Nature in all its many-splendoured glory. □

- G. Srinivasan

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ECOLOGICAL AND ENVIRONMENTAL PROBLEMS

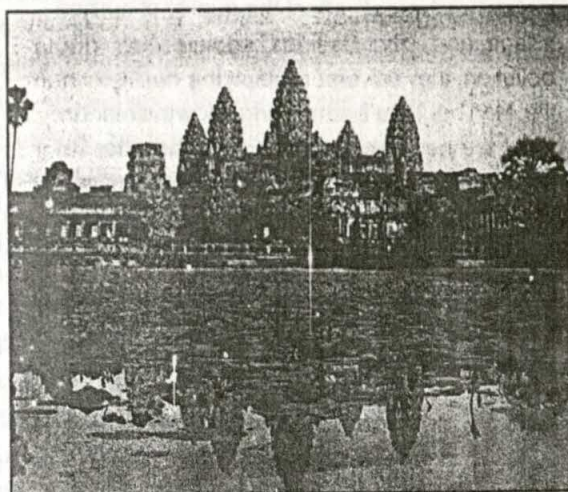
Dr.R.Pugazhendran ✍

The earth is the only planet so far known, to have an environment that can sustain life. Environment has been defined as the sum total of all conditions and influences that affect the development and life of organisms. There was a time when we could take pride in the scientific achievements which have the capability to control, transform and exploit the natural environment to our will. But, today we are face to face with a severe environmental crisis essentially due to indiscriminate use of this capability. Furthermore, the problem is not related to any particular country or region; rather it is global.

The concept of "environment" is often considered in a limited way to represent only the physical world around us. It is necessary to extend this definition to include not merely the biophysical natural environment, but also the man-made physical environment as the political, economic, cultural, technological, social and aesthetic environment.

Environmental conditions are not merely given but also created by the human beings themselves. It is therefore essential to conceive of environment in a holistic manner as the sum total of all conditions and influences -- physical, biological, social and cultural -- Which affects the development and life of organisms on this planet. The environment is to be viewed as a dynamic system in which the sub-systems are in constant interaction with one another undergoing continuous change.

Environment pollution appears to be a necessary evil of all development. It is particularly attributed to urban industrial development. Man inhabits two worlds. One is the natural world of plants and animals, soils and waters, of which he is a part. The other is the world of social institutions and artifacts, his tools and science and of his dreams to fashion an environment obedient to human purpose and direction.



It is difficult to imagine that man as a species could survive after impoverishing and polluting nature. Pollution may be defined as all those activities conscious or unconscious of human beings, which detract in any way, directly or indirectly, from the enjoyment of environment and the ability to derive full benefit, therefrom. Pollution occurs when as a result of human activities, enough of such substance is generated in environment as to create harmful effects. A substance is called a pollutant if it adversely alters the environment by changing the growth rate of species, interferes with the health, comfort, and entities or property values of the people.

Pollutants may be solid, liquid or gaseous. Pollutants may be classified into two groups, that is, visible and invisible. Visible pollutants include chimney smoke, wastewater from domestic or industrial sources, and garbage, often disposed off improperly and various bacterial species and viruses, which are a hazard to human health. The general cause of environmental pollution in an urban ecosystem which can be classified under five main heads:

- The pollution of the air
- The pollution of water
- Solid waste pollution
- Noise pollution, and
- Social pollution.

In addition to these, poverty and under development are also pollutions in every Indian village and city. Besides adding their quota to pollution, they adversely affect the quality of human life. Man began utilizing environmental resources to meet the needs of the fast multiplying number as well as to provide for a better living. However in this process, man has trespassed too far to the extent of causing serious ecological and environmental problems. Air pollution is one of the commonest forms of environmental deterioration in the cities of both the developed and the developing countries. Air pollution refers to those conditions in which general atmosphere contains substances in concentrations, which are harmful to man or his environment or which interferes directly or indirectly with man's comfort safety or health.

As a result of increased industrialization the percentage of carbon monoxide and sulphur dioxide is increasing in the atmosphere. The unabated use of insecticides and pesticides and the industrial and nuclear fallout's fly ash and particulates are increasing pollution in alarming proportions in the atmosphere. Moving and point sources pollute the air. Automobiles, ships, aircraft and rockets represent moving sources. Industries and thermal power plants are examples of point sources. Air pollution is most visible. It affects living organisms significantly. Apart from creating problems of poor visibility, dust pollution causes respiratory diseases, include pneumoconiosis, caused by inhalation of dust, including silicosis and asbestosis, eyes ailments that include cataract, conjunctivitis corneal ulcers, and squint trachoma.

Untreated industrial waste and city garbage disposed off in the oceans is toxic to marine life. Water pollution in most of the rivers, lakes and reservoirs of the country has increased and their water is not considered safe for human consumption without proper treatment. Water pollution is the most important cause of public health problem both in urban and rural areas.

Water-borne diseases, such as cholera, typhoid, diarrhea, dysentery, malarial and intestinal worms claim a heavy toll of life.

Land pollution

Land pollution in urban centers is due to large amounts of solid wastes which are not properly disposed. Solid waste may be defined as unwanted or discarded material in solid form resulting from normal practice of the communities. Solid waste or city refuse is produced as a result of human activity. The quantity and quality of waste vary with the standard of living, type of community and urban management. In spite of instructions to the contrary, people find the streets and roads ideal places for throwing out rubbish. There are mounds of household garbage on the streets, just outside the houses. Stray cattle are other sources for polluting the roads and streets. Children are seen defecating in the streets and lanes.

The main sources of noise pollution are automobiles and loudspeakers. At places industries and trains also contribute their quota. Everyday public meeting and processions by numerous political and social groups make and create too much noise. The barking of stray dogs, clatter of utensils and habit of talking loudly add to environmental noise. Marriage procession on an average produces about 75 to 80 decibels of noise. Public meetings about 85 to 90 decibels, motor cycles and heavy trucks about 90, loud speakers about 110 and commercial aircraft about 120 to 140 decibels.

Noises of modern society have an adverse impact on human health and physical system. The efficiency of a person is reduced and damaged affecting the sense organs and nervous system. Noise can be damaging to the human ear. Many emotional and behavioral problems occur apart from rise in blood pressure, mental abnormalities in foetus, headaches, etc.

Social pollution refers to those aspects of urban problems such as problems of residence including housing congestion, problems of population such as child labour, beggars' exploitation and corruption, inadequate and bad

housing, insufficient community facilities and services, social exploitation and maladjustment. Haphazard growth of cities without increasing road facilities, public amenities, lack of parks, schools, water supply and other facilities for a healthy social life, contribute to social pollution in urban life.

One environmental aspect of transportation facilities largely ignored is that of light pollution. In many areas light pollution has become an important aspect of both planning and design. Neighbourhoods are becoming more sensitive to the light that is being directed towards their property and windows.

Astronomers and observatories are becoming more concerned with the increase in the sky glow around urban areas. It has been estimated by researchers that up to 50% of all light pollution may be the result of roadway lighting. This firmly puts light pollution in the hands of traffic engineers and it will become their responsibility to find adequate and economic solutions. After having gone too far in polluting nature, man has of late come to realize that the time has come to take remedial measures.

Environmental perception, education and awareness play a most significant role in the management of environment. To the extent to which the citizens understand and appreciate the value of environment for aesthetics, health and happiness they will be found responsive in safeguarding the environment individually and cooperatively. These differences can be observed in different cultures, levels of awareness and the state of environment in different regions and countries.

Environmental perception has been defined as the process of taking cognizance of a sensible or a quasi-sensible object, or the process of becoming aware of something. Thus environmental perception is the process of taking cognizance of the environment. This process is not as simple as it appears to be as it is based on custom, culture, faith, objectives and experiences and differences from person to person. The environmental crisis extends to both the developing and the developed

countries of the world. To natural hazards is added the quota of technological hazards exposing man and nature to ever increasing risk zones. Solutions to environmental problems and to environmental management need a priori clear perception about them. Without proper understanding of the base of perception and behaviour, environment planning and management cannot succeed. There is a need to know how the people see the environmental problems of the area in which they live and how that perception affects action, at the people's and the organizational levels. A clearer perception stimulus awareness encourages people's participation in creating better environmental condition. But perception may vary according to culture and mythology and religion and the state of education and development.

Individuals and groups of people relate to the environment through their perception or cognition of them. Slums are created mainly because of poverty, social backwardness and unemployment of the people living in the countryside who subsequently move to urban areas without any other option. Due to drought or other unfavourable conditions many people residing in these areas having no work to earn their livelihood or those who find themselves in a difficult condition to maintain themselves naturally drift towards the urban areas with the main objectives of eking out their livelihood. The relative advantage of the amenities available and job opportunities attract them towards big towns and cities and naturally there is a radical growth of inflow of poor and labour class to these cities and towns from all directions. So these people who have been drifting almost continuously towards the cities occupied unauthorized vacant space in and around the cities with or without the help of their people and sometimes through some unauthorized agents or brokers or other vested interests. ■

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December'07

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Environmental Problems in India

A Subbiah

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There has been a growing awareness of global environment concerns such as ozone depletion, the green house effect, climate change and biological diversity. There is a direct relationship between environment and the economic development of the country.

The growth of heavy industries is creating many environmental problems. The chemical industries are producing dangerous chemical effluents. The industries near rivers are sending dangerous effluents into the rivers. This leads to air and water pollution. Cancer, liver damage, neurological impairment and many other health problems are their harmful effects.

Using pesticides and chemical fertilizers in extensive cultivation of crops, creates environmental problems. But bio-fertilizers, bio-pesticides and over all bio-energy resources have economic and environmental benefits.

The exhaust emission from automobiles is a major source of air pollution in towns. Much of the unburnt carbon in the exhaust can be reduced by improving combustion chamber design.

The poor who constitute a majority of our country have practically no access to covered toilets. They use open places as toilets, which produce harmful effects.

This paper deals with the environmental problems related to India such as problems due to deforestation, use of plastic bags, population growth, urbanisation, excessive use of fertilizers and pesticides and carbon emissions from automobiles. This paper also gives suggestions to overcome the environmental problems.

Deforestation and Environmental Pollution

Forests are essential for environmental protection. Deforestation causes many environmental problems. It causes floods, droughts and the like. The droughts lead to the problem of water scarcity, wind erosion and the like. In order to protect our natural resources, deforestation should be arrested.

Because of cutting forest in hills and plains, drought has become a perennial feature in India.

Even Cherapunji in North East India, which receives the maximum rainfall in the country, has a problem of water scarcity, because forest have been destroyed (Ushai Rai, 2000).

Queues of people waiting to collect water with their pots have become a common feature in cities even in village and fight for water are increasing. Deforestation is one of the important reasons for this. Growth of population, urbanisation and forest fire are some of the reasons for deforestation. In 1951, 22 per cent of India's geographical area was forest. By 1997, the forest area got reduced to 19 per cent. The total area under forest has declined from 72 million hectares at the time of Independence to 63 millions hectares in 1997.

India possesses around 16 per cent of world's population and 15 per cent world's livestock but only 2.4 per cent of world's land and 1.7 per cent of world's forest stock. This clearly indicates that the forest stock which is essential for environmental protection is very low in India, when compared with its population.

Plastic Bags Pollute the Environment

Use of plastic especially plastic bags pollute the environment. Now the Central and State Governments have taken steps to check the use of plastic bags. In India people use plastic bags, which pollute the environment.

Plastic bags are non-biodegradable. So when they are thrown away, they create many environmental problems. In India, plastic bags are thrown into the sea, especially in tourist centres and cause immeasurable harm to marine life.

Stream and stretches of rivers are affected by plastic bags. In Yamuna, in Delhi as well as down stream, receives hundreds of polybags every day, with flowers wrapped up in them as offering to the almighty. Some plastic bags contain toxic dyes. When the plastic bags are used for packing the foodstuffs, the toxic dyes can leak into foodstuffs, endangering consumer health (Bharati Chaturvedi, 1999).

Plastic cannot be continuously recycled. Since

most carry bags are made of recycled materials, their further use to the reprocessing industry is limited. Burning results in air pollution and toxic ash.

Now Central and State Governments have taken steps to check the use of plastic bags. Himachal Pradesh Government has taken steps like conducting an awareness campaign, imposing taxation to discourage plastics. In Pune, the army has banned plastic bags in the Cantonment area. Plastic bags have also been prohibited in the Sabarimala Temple Complex in Kerala, in Delhi Zoo, Jammu and Kashmir, Mahalaya, Rajasthan and Goa. Yet plastic remain resolutely entrenched.

The Central Government has also taken steps through its draft notification, Recycled Plastics Usage Rules 1998. The notification bans the use of carry bags or containers of recycled plastics for storing, carrying and packing food stuff.

Growth of Population Creates Environmental Problems

India's population has grown from 361 million in 1951 to 1027 million in 2001. The annual growth rate of population ranges from 2 per cent to 3 per cent is considered as explosive growth of population. India is experiencing an annual growth rate of more than 2 per cent which is an explosive growth of population. At this growth rate, India's population is expected to double in 35 years.

Population growth becomes a burden as it multiplies pressures on space and resource. At the present explosive growth rate of population in India, it is difficult to accommodate and feed the growing population and the growth of population is significantly influencing resource depletion and environmental pollution.

Agriculture and its allied activities have extensively grown in order to fulfill the growing population. Excessive use of chemical fertilizers and pesticides in extensive cultivation to increase the output has led to soil degradation and other environmental problems.

Industrialisation is another significant cause of environmental pollution. Population growth contributes to the growth of industrialisation in India. The fertilizer industries, leather, refineries and paper industries in our country discharge huge amounts of sewage and industrial effluents which contain organic

pollutants and other chemicals. This results in air pollution and water contamination.

Larger the size of population greater will be the volume of waste created. Residuals and wastes are generated in all stages of production and consumption of goods and services. These wastes accumulate and become pollutants affecting the entire surroundings harmfully.

Thus the population growth leads to environmental pollution problems in India.

Urbanisation Creates Environmental Problems

Urbanisation, particularly during the later years of 20th century is causing environmental problems in India. Growing urbanisation in India creates many environmental problems. The pace of urbanisation has always been faster than the pace of population growth. The percentage of urban population in total population in India which stood at 17.29 per cent in 1951 has increased to 25.72 per cent in 1991 and it is estimated that this percentage would increase to 43.76 per cent in 2021 Employment News, (2000). The growing urbanisation in India is due to not only the natural increase of population in urban areas but also migration of people from rural areas and from smaller towns.

Urbanisation, as an agent of pollution, creates infrastructural pressure and population concentration. Due to urbanisation, the size and the number of cities increase. As a result, competition for production and consumption of goods and services and space intensifies. As a result diseases, crowded transport, sewage and housing problems increase.

Excessive Use of Chemical Fertilizers and Pesticides Cause Environmental Pollution

Excessive use of chemical fertilizers and pesticides is a significant environmental problem in India and kills honey bees and earthworms which disturbs balance of nature and reduces the agricultural output. But bio-fertilizers, bio-pesticides and overall bio-energy resources have economic and environmental benefits.

Carbon Emission from Automobiles Creates Environmental Problems

The exhaust emission from automobiles is a major source of air pollution at any big cities in India. In Delhi, right enough the winter one cannot see the stars

-twinkling in the sky because vehicular pollution and carbon emissions have created a cloud of pollution over the city. The Centre of Science and Environment has pointed out that one person dies every hour in Delhi because of air pollution.

Involvement of General Public in Environmental Conservation in Virudhunagar District (Tamilnadu)

Some observations based on my Minor Research Project sanctioned by the University Grant Commission entitled "General Public Awareness of Environmental Pollution and Involvement in Environmental Conservation - A Case Study of Virudhunagar District (Tamilnadu)" are being discussed here. As a part of this study a survey was conducted to assess the involvement of general public in environmental conservation in Virudhunagar District. For the purpose of the survey 450 persons of Virudhunagar District were selected. There was a proportionate selection of rural, semi-urban and urban people (i.e. 150 persons from rural, semi-urban and urban areas). The primary data were collected from the respondents of different age, sex, income and literacy groups.

For the purpose of primary data collection, an interview schedule for the respondents was prepared. The interview schedule was used to ascertain the awareness of the respondents about the environmental pollution and to know the involvement of respondents in environmental conservation.

The intensive and extensive cultivation and the consequent necessity of applying pesticides and insecticides, chemical fertilizers and the like create many types of disharmony. Soil erosion, reduction of fertility, devastation of earthworms are the serious reasons behind the danger. Even though most of the respondents (farmers) in the District are aware that extensive use of chemical fertilizers and pesticides create environmental problems, they still apply chemical fertilizers and pesticides instead of using bio-fertilizers and bio-pesticides. By the personal observation of the investigator, it is found out that involvement in this regard is poor in the District.

Involvement of general public in environmental conservation with regard to the use of covered toilets is poor in the District. Out of the 450 respondents surveyed only 270 have used covered toilets (Rural 52, Semi-urban 85 and urban 133) and the remaining use open places as toilets.

Now the Government, through municipalities and panchayats are providing subsidized loans to construct covered toilets. In the District, even the persons who are having covered toilets in their houses use open places as toilets in rural and semi-urban areas. In the urban areas, some of the parents allow their children to use the open places, which are very near to their residential areas as toilets, even though they have covered toilets in their houses. This creates many environmental problems.

Garbage collection is the job of municipalities and panchayats. The municipalities in Tamilnadu including Virudhunagar District are now experimenting with collecting the garbage, from door to door in two large bags. One bag for plastic items, which are non-biodegradable items and another one for other garbage, which are biodegradable. The collected garbage is disposed off separately at the disposal points. This is a very good method of garbage collection done by most of the municipalities in Tamilnadu including the municipalities in Virudhunagar District.

The people should come forward to help the municipal employees in collecting the garbage. The involvement of general public is essential to keep their area clean. Environment is every body's concern. The involvement of majority of the people is poor in this regard. In some places the municipal employees took the trouble of knocking on the doors of some of the people who had forgotten to keep the garbage out.

Ban on use of plastic bags has not been successful in the District. In big hotel use of plastic bags for packing foodstuff is banned by the Government of Tamilnadu. But this is not effectively implemented in the District. In some hotels (where the plastic bags are banned), most of the customers insist the hotel employees to pack the foodstuff in plastic bags. People's involvement is very essential for not using plastic bags for packing the food articles. By the personal observation of the investigator, it is found that involvement of public in this matter is poor in the District.

There are a number of hotels near the National Highway (N.H) No. 7, which pass through Sattur and Virudhunagar Taluks of the District. There are no proper drainage facilities in most of the hotels situated near N.H 7 in the District. A large number of plastic carry bags with other waste find a permanent resting place near the hotels. That cause many environmental

problems including air pollution.

The owners of the big hotels in the District, as an environmental conservation activity, should come forward to shift from poly bags to paper and cloth bags. By the personal observation of the investigator, it is found that their involvement in shifting the poly bags to paper bags or cloth bags is poor in the District.

Most of the extension areas of towns and villages in the District have no proper drainage facilities. In some places the sewage passes very near to drinking water pipelines, which causes water pollution. The people who are residing near the riverbanks are sending sewage into the river. The sewage passes near to drinking water pumping stations in some places that will result water pollution. The people residing near the riverbanks and the municipal authorities should come forward to do proper drainage facilities for sewage. They should not allow the sewage to join the rivers that affect the quality of the drinking water.

The District receives a scanty rainfall, with an annual average rainfall of only 985.7mm. The bulk of rainfall is received during the northeast monsoon season from October to December. In these months, people can involve in tree planting (especially drought prone trees) activities near their residential area. But the involvement in this regard is not encouraging.

Biogas provides a clean and efficient fuel for domestic purposes. It saves consumption of wood, charcoal, kerosene and diesel. It saves the labour of women and children in rural areas who normally spend considerable time and energy to cover long distances daily to collect fuel. It would eliminate the practice of indiscriminate felling of trees and consequently prevent soil erosion. Biogas can also be used for lighting purposes.

Bio- gas plants are the effective means of the sanitary disposal of human excreta. By putting all human and animal excreta into a biogas plant, the problem of waste disposal is solved at the family level itself. During decomposition in biogas plant, most of the diseases causing organisms are killed. Thus biogas plants improve sanitation. The involvement of general public in using biogas is poor in the District. Out of total 450 respondents, no one use biogas.

Suggestions

The following suggestions are given to overcome the Environmental Pollution problems in India:

- Using pesticides and chemical fertilizers in extensive cultivation of crops creates environmental problems. The Government and the voluntary organisation should take steps to popularise the use of bio-fertilizers and bio-pesticides, which are having environmental benefits.
- The exhaust emission from automobiles is a major source of air pollution in most of the towns in India. Much of the unburnt carbon in the exhaust can be reduced by improving combustion chamber design. The Government should take steps by controlling air pollution due to emission from automobiles by formulating efficient transport policies. The automobile industries and oil industries must also come forward to improve their existing standards to save the atmosphere from air pollution.
- The voluntary organisations should come forward to celebrate the June 5, "World Environment Day" in most of the villages to create awareness of rural mass about the environmental pollution and encourage them in environmental conservation activities.
- There is a Central Pollution Control Board which co-ordinate the State Pollution Central Boards throughout the country. These regulatory bodies have been entrusted with the responsibility of continuous monitoring and routine check up of the environment problems. These agencies take necessary action against erring industries. At the same time, it is expected that the industries act according to the guidelines proposed by Pollution Control Board.
- The owners of big hotels and grocery shops should come forward to change poly bags and use paper and cloth bags.
- Appropriate and immediate legislation is needed to control and regulate the use of ground-water and protect surface water sources so as to ensure a basic sustainable supply of drinking water for rural population.
- In order to control population growth, the marriageable age of girls and boys need to be considered by the Government. The age of marriage for girls should be raised from 18 years to 20 years and of boys 25 years from the present 21 years. This is under active consideration of the Central Government and this must be implemented so as to control population growth.

problems including air pollution.

The owners of the big hotels in the District, as an environmental conservation activity, should come forward to shift from poly bags to paper and cloth bags. By the personal observation of the investigator, it is found that their involvement in shifting the poly bags to paper bags or cloth bags is poor in the District.

Most of the extension areas of towns and villages in the District have no proper drainage facilities. In some places the sewage passes very near to drinking water pipelines, which causes water pollution. The people who are residing near the riverbanks are sending sewage into the river. The sewage passes near to drinking water pumping stations in some places that will result water pollution. The people residing near the riverbanks and the municipal authorities should come forward to do proper drainage facilities for sewage. They should not allow the sewage to join the rivers that affect the quality of the drinking water.

The District receives a scanty rainfall, with an annual average rainfall of only 985.7mm. The bulk of rainfall is received during the northeast monsoon season from October to December. In these months, people can involve in tree planting (especially drought prone trees) activities near their residential area. But the involvement in this regard is not encouraging.

Biogas provides a clean and efficient fuel for domestic purposes. It saves consumption of wood, charcoal, kerosene and diesel. It saves the labour of women and children in rural areas who normally spend considerable time and energy to cover long distances daily to collect fuel. It would eliminate the practice of indiscriminate felling of trees and consequently prevent soil erosion. Biogas can also be used for lighting purposes.

Bio- gas plants are the effective means of the sanitary disposal of human excreta. By putting all human and animal excreta into a biogas plant, the problem of waste disposal is solved at the family level itself. During decomposition in biogas plant, most of the diseases causing organisms are killed. Thus biogas plants improve sanitation. The involvement of general public in using biogas is poor in the District. Out of total 450 respondents, no one use biogas.

Suggestions

The following suggestions are given to overcome the Environmental Pollution problems in India:

- Using pesticides and chemical fertilizers in extensive cultivation of crops creates environmental problems. The Government and the voluntary organisation should take steps to popularise the use of bio-fertilizers and bio-pesticides, which are having environmental benefits.
- The exhaust emission from automobiles is a major source of air pollution in most of the towns in India. Much of the unburnt carbon in the exhaust can be reduced by improving combustion chamber design. The Government should take steps by controlling air pollution due to emission from automobiles by formulating efficient transport policies. The automobile industries and oil industries must also come forward to improve their existing standards to save the atmosphere from air pollution.
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- The expansion of employment opportunities, particularly in rural areas, will bring about a reduction in migration rate from rural to urban areas. This will reduce the urbanisation and also greatly solve the problems of water scarcity, sanitation problems in urban areas. The Government should also formulate the policies to provide all the basic amenities in villages to stop the rural mass from migrating to urban areas.
- The present size of urban population and its unabated growth pose a major challenge to Indian planners. The availability of housing, water supply, sanitation and other civic amenities in urban areas need to match the increasing urban population. Migration from rural areas to urban cities needs to be curbed so that urban areas do not become over-congested. The PURA (providing Urban Amenities in Rural Areas) should be implemented by the Government effectively to control the urbanisation trend in India.
- Regular awareness campaigns should be conducted by voluntary organisations to create awareness about environmental conservation activities.
- Television channels and cable operators should come forward to present serial stressing of the need for environmental protection and suggest measures through their channels during the important programmes.
- Appropriate films for creating awareness of general public about environmental pollution problem and encouraging them in environmental conservation activities should be produced by Government Film Division and can be shown in public places, schools and colleges. The NSS Units of Schools and Colleges can be provided with posters (expressing the need for environmental protection measures to be adopted by the public) for pasting.
- The District authorities should undertake different activities like organising seminars, symposia and debates on environmental issues. The District Authorities should quite often organise the awareness campaigns to publicise the importance of afforestation, danger of water pollution and air pollution.

A massive programme of waste land development through afforestation and tree planting with people's participation should be popularised. This should be done especially during the monsoon

season. Government and other voluntary organisation should educate the common mass about the need.

Conclusion

There is an urgent need to create public awareness for environmental conservation. In schools and colleges, Environmental education should be introduced as a compulsory subject. Now All India Council for Technical Education (AICTE) and University Grants Commission (UGC) insist the universities to introduce Environmental education as a compulsory subject for all undergraduate courses. As directed by the AICTE and UGC, most of the universities of our country introduced environmental education as a compulsory subject for all undergraduate courses. This will create awareness among the younger generation of our country about environmental pollution problems and induce them in environmental conservation activities.

Regular awareness campaigns should be conducted by voluntary organizations and by appropriate government agencies to create awareness among the general public about the environment pollution problems and induce them in environmental conservation activities. This helps us to protect our natural resources and to get pure air and clean water.

Above all, people's willingness and ability to take up the task of saving the planet from environmental pollution is needed. Any environment policy, Government Legislation, Regulation for environmental protection can be successful only with people's participation. Therefore, for preventing environmental pollution problems people's participation is essential.

References

1. Ushai Rai. (2000). "Eating into the Green Reserves", *Yojana*, August, p.45.
2. Ibid., p.47
3. Ibid.
4. Bharati Chaturvedi. (1999). *Plastic Bags, Hindu Survey of the Environment*, p.175.
5. Ibid., p.176.
6. Ibid.
7. Ibid., p.177
8. *Employment News*-11-17, March 2000, p.3.
9. Ushai Rai, Op.cit., p.46.

Environmental Threat to Human Intelligence in the New Millenium

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The Indian dictum says "*The earth is our mother and we are all her children.*" Environment is the totality of circumstances surrounding an organism or group of organisms especially :

- a. The combination of external physical conditions that effect and influence the growth, development and survival of organisms.
- b. The complex of social and cultural conditions affecting the nature of an individual or community.

The human species is in a word, an environmental abnormality, co-existing and influencing each other for decades. Unlike any creature that lived before, we have become a geophysical force, swiftly changing the atmosphere and climate as well as the flora and fauna. Human species has doubled to 5.5 billion during last 50 years and schedule to double in next 50 years. With this enormous population pressure and advent of the global industrial civilization the humanity is becoming suicidal by creating a threat to environmental health, comprising those aspects of human health that are determined by physical, chemical, biological, social and psychosocial factors in the environment. Environmental health includes both the direct pathological effects of chemical, radiation and biological agents resulting environmental pollution. The release of harmful environmental contaminants like carbon monoxide, sulfur dioxide and nitrogen oxide produced by industry and motor vehicles are common air pollutants. Water pollutants may consist of a wide range of organic and inorganic chemicals such as metals petrochemicals, chloroform and bacteria. Pollutants are thought to play a part in a variety of maladies including cancer, immune diseases, allergies, asthma and many others. As a consequence of the improved technologies which are the brainchild of human intelligence, envircnment is getting polluted and harming the intelligence of millions of people across the world.

Thus according to Christopher Williams -

"Human brain is now at risk from its own behavior, and nothing else in the ecosystem is harming itself in the same way." Millions of people now suffer intellectual decline because of human caused environmental change.

Environmentally Mediated Intellectual Decline

The human brain reached its current favorable state because of positive interaction with its environment over millions of years. We evolved bigger brains at the cost of a smaller digestive system, requiring high quality food. If food supplies became poor quality or contaminated, this might favor humans with a bigger gut but a resultantly smaller brain. Like a terminus, the brain is both end point & starting point of our interaction with our environment—it is victim, perpetrator and cure. Decade of brain largely concern neuro-toxic environmental agents such as lead, radiations, Polychlorinated biphenyls (PCBs) coupled with the dietary absence of vital environmental micro-nutrients such as iron and iodine. A new term EMID (Environmentally - Mediated Intellectual Decline) was coined to encapsulate the various elements. (Fig. 1)

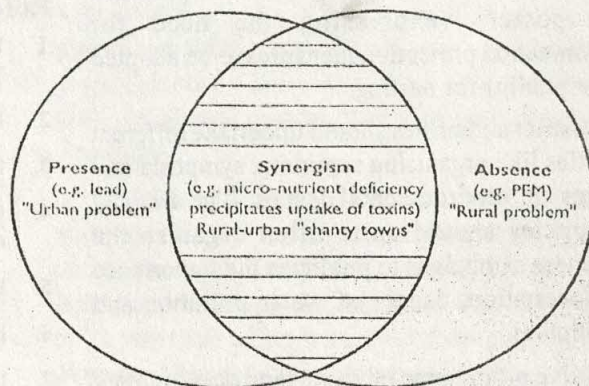


Fig. 1: Full Extent of EMID

Polluting Agents : Lead pollution and iodine deficiency are well known causes of EMID, but there are other hormone disrupting chemicals, which could surpass the significance of lead because these chemicals are persistent and there is no clinical treatment. In 1989, the impact of radiation on human intelligence was affirmed by the release of data concerning the Atom bomb survivors in Japan and radiation at Chernobyl resulting an increase in Down's syndrome. Radiation from uranium and thorium mining activity also causes intelligence decline. Careless use of pesticides in agriculture and fish farming is shown to have caused intellectual disabilities. Mercury is another ubiquitous metal currently used for coal fired power plants, which can cause irreversible memory, motor and speech problem.

Dioxin, the most toxic chemical unwanted by-product of many industrial purpose (waste incineration, paper bleaching, pesticide manufacturing), resulted in abnormal mental development, because of thyroid disruption, impair intellectual development. Parkinson's Disease is a chronic progressive neurological disease affecting the part of brain called the substantia-nigra. While the cause of Parkinson's disease is not known, a number of potential environmental factors have been identified like Rotenone, a commonly used insecticide and Paraquat also an insecticide.

Impact on Children : Scientists say that relatively low levels of pollutants that seem to have no immediate impact on adults may have devastating effects on children or fetuses, often disrupting the thyroid, a key organ in mental development. In 1996, a study by Sandra & Joseph Jacobson of Wayne State University found that children exposed to low levels of PCBs in the womb grow with a lowered intelligence, poor reading comprehension and memory problem and difficulty paying attention. In children lead, is known to cause neurological problem even at tiny doses. Most notably, lead has been associated with a decline in IQ & with learning disabilities, hyperactive behavior, violence and an increase in antisocial behavior. The principal source of lead exposure for children is lead contaminated dust from lead based paint. Lead impaired intelligence in:

1. 10% of Parisian children .
2. 17% of US children .
3. 25% of Mexican children..

4. 10% of British children.

5. 90% in some African cities

- Exposure to PCBs in breast milk affect - 5% of US Babies.
- Globally iodine deficiency (IOD) puts - 1.6 billion at risk.
- Polluted water in North India affects the IQ of 40% in some village.

Dietary Deficits: While the US was concerned about the presence of hazardous environment agents, UNICEF and the WHO were addressing the absence of environment micro nutrients, necessary for brain development. Protein Energy malnutrition (PEM) affects learning ability of a third of all poor-nation children. This 'hidden hunger' often stems from land degradation and forest depletion compounded by population pressure. Improved literacy reduces population. But intellectual decline reduces literacy, increasing population and precipitating a regressive spiral that can potentially affect adversely the health of present and future generation.

Malnutrition has been an accepted cause of intellectual decline since 1970s. High yield 'Green Revolution' crops were introduced in poorer countries including India in the 1960s to overcome famine. But these are now blamed for causing intellectual deficits because they do not take up essential micronutrients like iron and zinc. They have also displaced other nutritious indigenous food sources. Green Revolution iron deficiency effect is around 1.5 billion. The deadly combination of soil erosion, pollution and inadequate diet is affecting the intelligence of millions of people.

Risk Assessment: As there are no comprehensive statistics for EMID, risk assessment is inadequate, creating an "ignorance = safe" ethos. Risk assessment in relation to the brain is uniquely difficult. EMID might precipitate regressive brain evolution.

Justice: The law is quick to act against anyone who hits a child on the head & causes an intellectual impairment, yet the law does nothing concerning who drive cars with leaded petrol, thereby contributing to a similar condition in countless children. Eighty thousand victims of Chisso mercury poisoning at Minamata Bay waited for 40 years for compensation— most were in their seventies by then. The child with one arm who loses another because of a land mine is seen clearly as a victim, the child with Down's syndrome who has

the disability compounded through pollution from a lead smelter is not. Some laws reduce the rights of environmental victims - the US Radiation Exposure Compensation Act & Bhopal Legislation denies justice for future generation by preventing compensation claims.

Implications: Logically protecting our intelligence, would be a policy priority, but it is not policy makers need to recognise the existence of EMID, Not least, at there is a need for greater acceptance and support for people who have intellectual difficulties.

- Preventive environmental health policy should priorities the brain because it is the most vulnerable & valuable human asset.
- The costs for education & health services and a nation's intellectual resources means that EMID needs to be central to environment management & risk assessment.

Preventive Measures : Today, lead pollution comes from lead smelters, metal processing plant & incinerators, lead based paints, lead contaminated dust & lead contaminated residential soil. US Environmental Protection Agency (EPA) is playing a major role in addressing these residential lead hazards. In 1978, there were nearly three to four million children with elevated blood lead levels in United States. By 2002, that number had dropped to 310,000 kids, and it continues to decline. Thus it is clear, that lead poisoning can be controlled easily by reducing lead in gasoline, drinking water, industrial air pollution and limited lead used in consumer products including paints.

Role of Governments- Regional governments in cooperation with the petroleum industry, to solve extent in defiance of federal policy. Government to harmonise full specification to ease the introduction of unleaded gasoline and to develop policies for more stringent emissions standards. Government were called upon to work closely with other partners, civil society organizations and promote awareness. It should be the duty of all the governments along with the international organizations to avoid nuclear weapons to decrease the impact of radiations. Local governments should prioritize the availability of safe drinking water and uncontaminated food in every village.

Role of individuals- The society as a whole

should also follow some steps to reduce exposure to lead and other chemicals like mercury, dioxine, fluoride and pesticides. Individuals try to keep areas clean and dust free where children play, leave lead-based paint undisturbed, stuffed toys should be clean regularly. Parents have a right to expect that products that are used in the home are not contaminating their children, thus restricted use of pesticides and insecticides should be practiced.

Role of NGOs- Environmental NGOs have a very important role in protecting the environment by preventing the uses of all neurotoxin chemicals. Only 10% of the 70,000 commercially used chemicals have been tested at all for neurotoxicity. As a "third sector" NGOs have immense command on the government and can make them to pass legislation for preventing the use of these chemicals. NGOs can also spread awareness among the poor people about the dietary deficits causing intelligence impairment. The EU is negotiating new legislation called REACH to regulate industrial chemicals. WWF is calling for legislation to phase out chemicals that are persistent and bio-accumulative.

Conclusion

With the global population set to double in 50 years, it seems reasonable to claim that we will all survive better if the potential of our intellectual resources is maintained at an optimum level. The prognosis is that this potential is under threat. The growing human destruction of the Earth and the global environment threaten our future. Just as the dinosaurs became extinct because they could not to adapt to their changing environment, humanity faces extinction if it cannot adapt to a rapidly changing environment caused by our global industrial civilization.

In summary there is a need to obtain better and more coordinated local and global data collection on environmental exposure and to relate these exposure to disease outcomes. It would be great benefit to develop a global, strategic, epidemiological effort to understand the relationships between environmental exposures & ill health. Finally it is imperative that we develop a better understanding of the mechanisms and interactions between nutrition, infections diseases, environmental exposure and gene predisposition in order to develop better prevention method. ☐

6-11-07

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BOOK REVIEW

Environment and the poor

Analysis of whether social, economic and gender inequalities aggravate environmental degradation

Mihir Shah

Samuel Bowles is co-author of the best textbook on economics (*Understanding Capitalism*) I have read in nearly 40 years as a student of the subject. I find Bowles' recent work on cultural evolution and his use of "strong reciprocity" as a schema for predicting and understanding altruism in humans, nothing short of inspirational. Bowles is one of those who were asked by Martin Luther King Jr. to write background papers for the 1968 Poor People's March. Pranab Bardhan is the world's leading iconoclast on globalisation, punching holes in the certitudes of both Left and Right on its impact. Bardhan and Bowles head a research network on the Effects of Inequality on Economic Performance. The volume under review originated as a project of this network.

Economic inequality

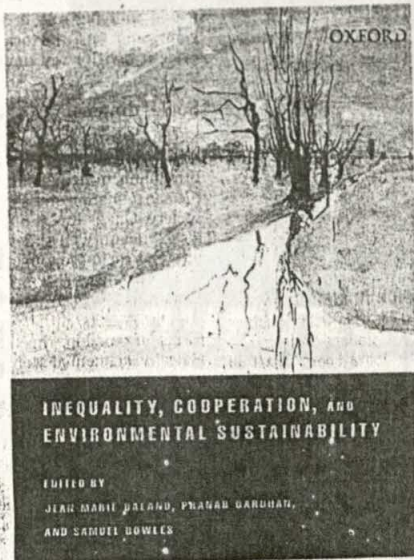
Does inequality aggravate environmental degradation? The book tries to answer this question in the context of local commons, essential to the livelihoods of the poorest people in the world. Does inequality make cooperation to protect the commons more difficult? Do the poor damage the commons in pursuing their own interests? The book is a collection of broadly two kinds of papers that try to grapple with these conundrums — some present theoretical approaches such as agent-based computational models, while others provide results of empirical studies from commons across the world, covering forest areas in Nepal and India, irrigation farming in South India and Mexico, as also fisheries in the U.S. and Senegal.

One of the most fascinating papers in the volume is by Juan-Camilo Cardenas who

follows Bowles' example of moving common-pool resource experiments out of the ivory towers of university students to actual users of forests surrounding three Colombian villages. Cardenas finds that inequality does impede collective action by creating social distance, the negative impact being greater for those with lower wealth levels. Why communication engenders greater cooperation in social dilemmas is because it helps forge group identities, reinforces group goals and their benefits, and creates non-monetary social costs for free-riders. But wealth distances the possibilities of building trust. Poverty by itself does not limit cooperation though. Indeed, poorer but homogenous groups seem willing to cooperate to increase collectively generated individual benefits.

Environmental issues

Unsurprisingly, the most hard-hitting piece in this otherwise even-handed kind of book, is by James Boyce, who has for years been striving to sensitise mainstream economics on environmental issues. As Boyce says, "The global environment is our common home, but not everyone lives in the same room." Boyce's work reveals a shocking bias in hazardous waste disposal policy in the U.S. against low-income areas with high percentage of African Americans and other minority groups. Boyce argues that wider social and economic inequalities — based on class, race, ethnicity, gender, and age — lead to weaker environmental policies, which in turn result in greater environmental degradation. This suggests that inequalities in the distribution of power operate not only to the detriment of specific groups, but also to the detriment of environmental quality as a whole.



INEQUALITY, COOPERATION AND ENVIRONMENTAL SUSTAINABILITY
EDITED BY
JEAN-MARIE BALAND, PRANAB BARDHAN,
AND SAMUEL BOWLES
INEQUALITY, COOPERATION AND ENVIRONMENTAL SUSTAINABILITY: Jean-Marie Baland, Pranab Bardhan and Samuel Bowles — Editors; Oxford University Press, YMCA Library Building, Jai Singh Road, New Delhi-110001. Rs. 750.

The book also includes a high-quality paper by Bina Agarwal on how gender inequality impinges on prospects of cooperation and environmental sustainability. For this she draws on her fieldwork in community forestry sites in five Indian states in the late 1990s. Agarwal finds that women bear disproportionately higher costs and obtain lower benefits from forest closure than men. Both pre-existing gender inequalities and those that spring up when new institutions are created, reduce the inclination and incentive for women to participate in forest protection. Inequalities across gender in economic endowments, gendered social norms and perceptions and the coercion women suffer in gender relations at home and in the community,

all combine to constrain women's participation.

Land inequality

In their study of 48 villages spread over six districts in Tamil Nadu, Bardhan and Dayton-Johnson find that greater land inequality is associated with poorer maintenance of tanks/canals and higher incidence of water-related conflicts. This is confirmed by their comparative study of central Mexico. Their findings also underscore the importance of local rules for maintaining irrigation resources and infrastructure. It is clear that maintenance suffers in systems where a substantial proportion of farmers believe that rules were crafted by the local elite. Conflicts are lower where there is caste or ejido homogeneity. What David

Sally has termed "sympathy" (an inverse function of physical and psychological distance between people) is crucial. This clearly poses a serious challenge to conventional economic modelling that is still a great "distance" away, it appears, from the reality it is trying to understand!

For a book with so much insight and good guidance (as reflected in the quality of its editors), it is hard to comprehend how it can possibly include such shoddy empirical work as by Somanathan et al. in the Indian Himalayas and Baland et al. in Nepal. The Himalaya study suffers from an almost complete absence of ethnographic fieldwork, without which we get virtually no feel of the many social processes vital to an understanding of forest protection.

The Nepal study is even worse with its very poor quality data and again the lack of even an attempt to understand socio-historical and institutional dynamics. It is studies like these (and they sadly abound) that give econometrics a bad name. There appears a preoccupation (one could call it a vocation actually) with using (largely linear) regression models to answer questions (of the type "does x impact y?") in a simple "yes, no, can't say" sort of way, without any engagement with the far more interesting and insight-pregnant processes that govern these apparent "correlations". Indeed, as Samuel Bowles himself has said in another context, the economic theory of cooperation and general equilibrium theory, both favouring parsimony over realism, suffer from a curious lack of attention to dynamics and out-of-equilibrium behaviour. Unfortunately, some of the papers in the volume he has co-edited cannot be said to be entirely free of these faults.

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Global warming can hit India badly: Study

New Delhi, Nov. 19: Can global warming push India to go 'up in smoke'? A study by a coalition of developmental and environmental groups, called 'Up in Smoke', indicates that global warming can reverse decades of social and economic progress in India, and Asia, if no immediate action is taken.

Released in Delhi on Mon-

day, the study states that climate change can, and will, have devastating effects on India. For instance, climate change will bring about acute water shortage. This will affect the nearly 400 million people living in the Ganga basin.

More will be affected by the erratic floods, especially in the eastern and the northern regions, because of

the variable monsoons and long periods of drought in the northwestern and central parts of the country.

Shruti Shukla, a woman India who was one of the people behind the report, said it took her and the other members of organisations such as Greenpeace, Action-Aid and The Energy and Resources Institute (Teri) six months to put together

the report which talks about the impacts of global warming on Asia.

"Talking about the Indian dilemma, we are growing at the rate of nearly nine per cent per annum. That's good news, but in order to maintain the growth, we need resources. Where will the resources keep flowing from?"

"Erratic monsoons, floods,

drought, submergence of low coastal areas such as Orissa and the Sunderbans and adverse effect on health and productivity because of all of this and the rise in temperature...are we ready to deal with all of this?" Ms Shukla asked.

Due to climate change, agriculture will be affected, in fact, it already has. Around 600 million people

depend on agriculture, and unlike the rest of the economy, growth rate has been crawling at the rate of two per cent per annum.

K. Srinivas of Greenpeace said that alternative energy pathways could meet India's developing needs without further depleting fossil fuels. "A combination of renewable energy and energy efficiency has the potential of

supplying 60 per cent of India's electricity with appropriate policy measures while reducing the carbon intensity of our energy to a quarter of the current carbon intensity levels," Mr Srinivas said. The group suggested a renewable energy law, which can reduce dependence on coal from 67 per cent to as low as 10 per cent by the mid-century. (IANS)

HUMAN WASTE AND POLLUTION

Dr. M. Selvachandra

Healthy environment is the base for healthy life. During stages of lesser growth in human population, the effects of man made pollution were not felt. But the over growth of population has caused huge damage to the environment.

Environmental damage through human wastes :

Human activities are the basic causes for all kinds of pollution in every part of the world.

1. Ignorance

It is a pity that men have been ignorant of the fatal consequences of their own action in environmental pollution. They spend lots on buying other things but are not willing to spend a little in disposing his harmful human waste.

2. Selfish nature of people

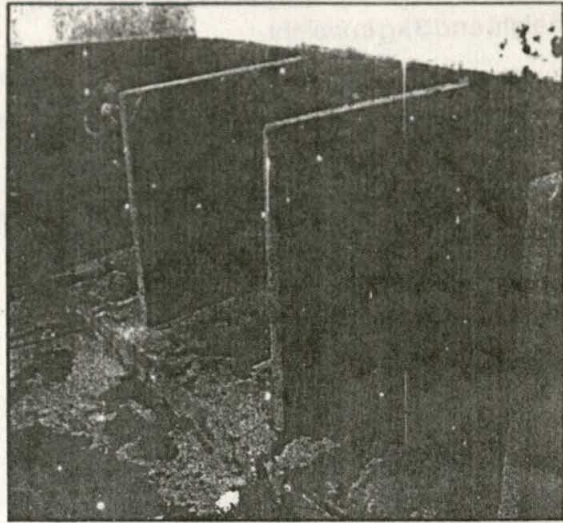
The selfish nature of human beings is the root cause of environmental degradation. Without any social consciousness, man causes his domestic waste spill all over the public road. They decorate their houses and the gateway to their house with kolams, but throw away wastes at common places.

3. Water scarcity leads to unhygienic condition

Water is the essential requirement for cleanliness. The need for water is felt more in keeping the lavatories clean. Community lavatories and the latrines at public places like bus stands, theatres, etc. create lots of pollution and diseases.

4. Poor habits

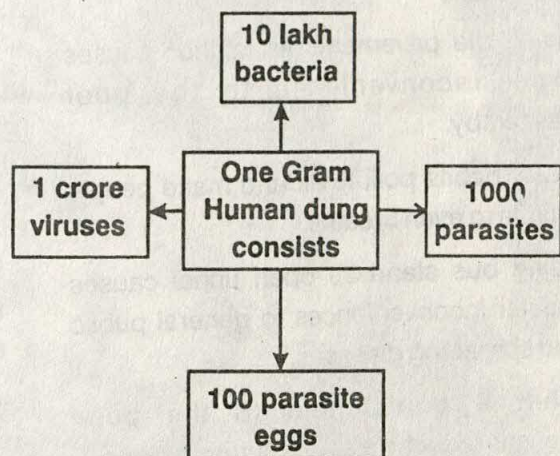
Waterless urinals especially for men at public places like bus stand make the environment ugly and nasty to the core.



5. Inability to construct latrines due to poverty

Poverty is the major barrier in proper disposal of human waste. Lack of finance is the main constraint in the construction of latrines in many houses. Improper disposal of human waste is the cause for human ill health.

Disease spreading human wastes



October'07

Impact of environment on the biological growth of people

A study undertaken in a most populated town, Kanpur, revealed that the average difference between a boy and or girl from a polluted area and non-polluted area was 4 cm in height and 3 kg in weight.

Healthy citizens not only depend on the number of doctors and hospitals, but also on clean environment. If the environment is prone to spread diseases the state of health of people will be poor. The environment protective system has to be both curative and preventive. But prevention is better than cure.

Health hazards caused by open latrines

Usage of open roadsides as latrines creates many health hazards and unhygienic condition to people. The specific problems of open latrines are as follows:

1. It pollutes air.
2. It pollutes ponds and river banks.
3. It spreads diseases like cholera.
4. It creates bad intolerable smell.
5. It creates unhygienic and unpleasant situation.

Think a While

- Using the pavements as latrines causes great inconvenience to the poor passersby.
- Nasty habits pollute air and make people unable to even breathe.
- Using bus stand as open urinal causes greater inconveniences to general public and spreading diseases.
- What a punishment to the poor scavengers, who are also human beings.

How to protect environment from human wastes

1. Educating people : Education brings tremendous change in the minds of the people. So, compulsory education for all, at least upto schooling should be made a must.

2. Creating awareness : Widespread awareness amongst people should be made about the ill effects using roadside pathways as open latrines.

3. Ensured water supply for lavatories : Continuous and free water supply is the basic need to keep the lavatories clean.

4. Habitual change is required : People should change their habits, which lead to spoiling environment.

5. Government Assistance : Government should help the poor households in construction, who are not able to afford the cost of construction of latrines.

6. Strict monitoring and penalty for violation : Strict monitoring mechanism should be arranged and those who violate the norms and pollute the environment should be punished.

7. Adequate number of health care workers should be employed to look after the environmental health.

A joint and coordinated effort is the need of the hour to create awareness, make people aware of and keep our environment clean and tidy.

– ADM College for Women,
Nagapattinam

MANAGING COMMON PROPERTY RESOURCES : A STRATEGY FOR SAFE ENVIRONMENT

M. Sabesh Manikandan & Dr. K. Raja Mohan Rao

There is every need to adopt the principle of co-existence with disciplined interaction between economic development and ecological balance. Otherwise, a day will come when the living being on earth will be doomed to perish, for want of good air, water and food. Hence the need for integrating economics with environmental principles.

Common property resources can be classified into many types depending upon their use for human beings and of nature itself, of which the renewable resources are the pastures, trees, fish, etc, and non-renewable resources are the minerals, coal etc. Some have the direct potential for income generation like common lands, water tanks, ponds, and others like roads, lights, groves, flora and fauna, are the indirect sources of sustainability for the human populace.

Environment involves everything living or non -

living, that surrounds us, for example air, land, water, people, plants, animals, minerals, automobiles, factories, etc., and therefore, an overall system of management is required to integrate our efforts in this direction. Every one of us has a right to live in an environment of quality. Therefore, it is essential to understand the function and interaction of physical and biological elements of the environment and apply this knowledge in sound management programmes to conserve the natural resources and culture. Hence, management of renewable resources in industry, agriculture, recreation, health, forestry



Let us invest for our future

fisheries, education or urban development is the primary need of the times.

India's ongoing population explosion has placed great strain on the country's environment. This rapidly growing population, along with a move toward urbanization and industrialization, has placed significant pressure on India's infrastructure and its natural resources. Deforestation, soil erosion, water pollution and land degradation continue to worsen and are hindering economic development in rural India, while the rapid industrialization and urbanization in India's booming metropolises are straining the limits of municipal services and causing serious air pollution problems.

2.0 Common property Resources

Common property resources can be classified into many types depending upon their use for human beings and of nature itself, of which the renewable resources are the pastures, trees, fish, etc, and non-renewable resources are the minerals, coal etc. Some have the direct potential for income generation like common lands, water tanks, ponds, and others like roads, lights, groves, flora and fauna, are the indirect sources of sustainability for the human populace.

The situation of commons in India, gives the impression that wherever strong community hold persisted, the commons continued to serve the purpose of meeting everybody's requirement. According to the Definition by customary management practices, one can list a larger number of CPRs, like, lands under different community uses (such as thrashing grounds, grazing pastures), wastelands (barren lands, shrub lands, etc.), forest lands, water resources (both ground and surface), and water bodies (tanks, ponds), fishery resources, biodiversity resources (such as sacred groves) common dumping grounds and many more.

Common property resources in India, broadly,

"include village pastures, community forest, waste lands, common threshing grounds, waste dumping, places watershed drainage, village ponds, tanks, river/rivulets and river beds etc., (Jodha, 1986).

Human life cannot exist in isolation. The life depends on the environment. The economic life, social and cultural activities of mankind are shaped by the Environment. Man in his over-enthusiasm and aspiration for better and fast living, tampers with the ecosystem and upsets the ecological balance. Herein comes the conflict between economics and ecology. The harmony between Nature and man is getting upset day by day due to extensive utilization of resources. Besides utilizing the resources for the production of material comforts and goods, the production process pollutes Nature by emissions and wastes. Exploitation of Nature has gone to the extent of bleeding Nature. There is every need to adopt the principle of co-existence with disciplined interaction between economic development and ecological balance. Otherwise, a day will come when the living being on earth will be doomed to perish, for want of good air, water and food. Hence the need for integrating economics with environmental principles. Most important problems faced by the human beings due to lack of proper management of common property resources are mentioned below:

3.0 Water Supply

Water is essential for life, health and human dignity. In extreme situations, there may not be sufficient water available to meet basic needs, and in these cases supplying a survival level of safe drinking water is of critical importance. In most cases, the main health problems are caused by poor hygiene due to insufficient water and by the consumption of contaminated water.

Water quality is important for preventing the spread of disease-i.e. diarrheal disease, parasitic infections, typhoid fever, and epidemics, such as cholera, that affect the health of the population. The

Table 1 : Basic Survival Water Needs

Survival needs: Water intake (drinking and food)	2.5-3 litres per day	Depends on: the climate and individual physiology
Basic hygiene practices	2-6 litres per day	Depends on : Social and cultural norms
Basic Cooking needs	3-6 litres per day	Depends on : food type, social as well as cultural norms
Total basic water needs	7.5-15 litres per day	

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microorganisms that cause these illnesses are transmitted by the oral-fecal route, directly or through water (including ice), milk, food, or hands contaminated with excreta. Vectors (insects, rodents, etc.) can also play an active role in this process. The proportion of the population with safe drinking water available at home or with reasonable access was 92.6 per cent in 1998/99 for urban areas and 72.3 per cent for rural areas.

At the time of formulation of the 8th plan, it was estimated that with regard to water there were about 3000 hard-core 'no source' villages out of a list of 'problem' villages numbering 162,000. Besides this, about 150,000 villages were only partially covered. Regarding urban water supply, the service levels are far below desired norms. During the mid 90s, an accelerated urban water supply programme was initiated for towns having less than 20,000 population. The provision of hygienic sanitation facilities through conventional sewage and on-site low cost sanitation has not been given priority. Though the 8th plan envisaged conversion of all existing dry latrines, the final result is nowhere near the target.

4.0 Excreta Disposal

Improper excreta disposal contaminates soil and water sources. It also often serves as a breeding ground for certain species of flies and mosquitoes, giving them the opportunity to lay their eggs and multiply or to feed and transmit the infection. It also attracts domestic animals and rodents who carry fecal matter on them and with it, potential diseases. Furthermore, this situation usually creates unsightly areas and disagreeable odours.

Bacteria, parasites and worms that live in excrement cause disease, such as diarrheal diseases, intestinal parasitic infections, hepatitis, and typhoid fever. In India, 600 million people who live mostly in rural areas have no access to toilets. Having no access to toilets has disastrous consequences for the spread of disease: some 6,000 children die every day from diarrhea caused by a lack of proper hygiene, according to international statistics. Over a year, for each person some 400-500 litres of urine and 50 litres of faeces are flushed away with 15,000 litres of pure water," according to the Stockholm Environment Institute (SEI). The proportion of the population with adequate excreta disposal facilities was 80.7 per cent in 1998/99 in urban areas and 18.9 in rural areas. Use of sanitation services protects health, prevents disease, and protects surface and ground water.

Safe disposal of human excreta creates the first barrier to excreta-related disease, helping to reduce transmission through direct and indirect routes. Safe excreta disposal is therefore a major priority, and in most disaster situations should be addressed with as much speed and effort as the provision of safe water supply. The provision of appropriate facilities for defecation is one of a number of emergency responses essential for people's dignity, safety, health and well-being.

5.0 Solid Waste Management

Solid waste may be refuse, manure, or animal cadavers. There is a correlation between improper solid waste disposal and the incidence of vector-borne diseases. As a result, arrangements must be made to collect, store, and dispose of refuse and manure.

Table 2 : Minimum Numbers of Toilets at Public Places and Institutions in Disaster Situations

Institution	Short term	Long term
Market areas	1 toilet to 50 stalls	1 toilet to 20 stalls
Hospitals/Medical centres	1 toilet to 20 beds or 50 out - patients	1 toilet to 10 beds or 20 out - patients
Feeding centres	1 toilet to 50 adults 1 toilet to 20 children	1 toilet to 20 adults 1 toilet to 10 children
Reception/transit Centre	1 toilet per 50 people 3:1 female to male	
Schools	1 toilet to 30 girls 1 toilet to 60 boys	1 toilet to 30 girls 1 toilet to 60 boys
Offices		1 toilet to 20 staff

Source: adopted from Harvey, Baghri and Reed (2002)

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If organic solid waste is not disposed of, major risks are incurred through fly and rat breeding (see Vector Control section) and surface water pollution. Uncollected and accumulating solid waste and the debris left after a natural disaster or conflict may also create a depressing and ugly environment, discouraging efforts to improve other aspects of environmental health. Solid waste often blocks drainage channels and leads to environmental health problems associated with stagnant and polluted surface water.

Estimate the quantity, type, and capacity of the water storage containers, based on the number of persons and existing services. For a short time, empty food containers, plastic or water-resistant paper bags, and disposable packaging can be used. The capacity of the containers should be 50-100 liters and should not exceed 20-25 kg when full.

Provide three or four containers per 100 persons and distribute them so that every family has access to a container (or plastic bag). The containers should not touch the ground, for example they should be on a wooden platform. They must be emptied and washed daily.

In regard to regular waste collection and final disposal service, organize collection, transport, and final waste disposal service, involving the persons living in the shelter or camp. For final disposal, bury the waste by building pits 1.5 meters wide, 1.5 meters long, and 2 meters deep. At the end of each day, cover the refuse with 15 cm of dirt and pack it down. This pit will last 10 days for a population of 200. For larger populations, increase pit size proportionately, up to a maximum of 3 meters x 3 meters. Before the pit is full, cover it with a layer of packed dirt 40 cm thick, so that it is level with the ground. Then dig a new pit.

6.0 Managing Medical Waste

Separate common, hazardous, and sharp waste, preferably in strong containers with plastic covers. Dispose of common waste in the pit described above or other similar ones. Sharp waste will be disposed of in a hole or pit with 1 m³ capacity, covered with a heavy concrete slab. A tube 2 inches in diameter will run through the slab and extend roughly 1.5 meters above it. The tube will be used for depositing needles and surgical blades without syringes or venoclysis tubes.

7.0 Drainage

Surface water in or near emergency settlements

may come from household and water point wastewater, leaking toilets and sewers, rainwater or rising floodwater. The main health risks associated with surface water are contamination of water supplies and the living environment, damage to toilets and dwellings, vector breeding and drowning. Rainwater and rising floodwaters can worsen the drainage situation in a settlement and further increase the risk of contamination.

A proper drainage plan, addressing storm water drainage through site planning and wastewater disposal using small-scale, on-site drainage, should be implemented to reduce potential health risks to the population. This section addresses small-scale drainage problems and activities. Large-scale drainage is generally determined by site selection and development.

8.0 Vector Control

A vector is a disease-carrying agent and vector-borne diseases are a major cause of sickness and death in many disaster situations. Mosquitoes are the vector responsible for malaria transmission, which is one of the leading causes of morbidity and mortality. Mosquitoes also transmit other diseases, such as yellow fever and dengue haemorrhagic fever. Non-biting or synanthropic flies, such as the house fly, the blow fly and the flesh fly, play an important role in the transmission of diarrhoeal disease. Biting flies, bed bugs and fleas are a painful nuisance and in some cases transmit significant diseases such as murine typhus and plague. Ticks transmit relapsing fever and human body lice transmit typhus and relapsing fever. Rats and mice can transmit diseases such as leptospirosis and salmonellosis and can be hosts for other vectors e.g. fleas, which may transmit Lassa fever, plague and other infections.

Vector-borne diseases can be controlled through a variety of initiatives, including appropriate site selection and shelter provision, appropriate water supply, excreta disposal, solid waste management and drainage, the provision of health services (including community mobilisation and health promotion), the use of chemical controls, family and individual protection and the effective protection of food stores. Although the nature of vector-borne disease is often complex and addressing vector-related problems may demand specialist attention, there is much that can be done to help prevent the spread of such diseases with simple and effective measures, once the disease, its vector and their interaction with the population have been identified.

All disaster-affected people have the knowledge and the means to protect themselves from disease and nuisance vectors that are likely to represent a significant risk to health or well-being.

9.0 Conclusion

India loses most number of lives to diarrhoea in the world, yet its military spending is eight times more than on water and sanitation. According to the latest Human Development Report (HDI) while the country is making considerable progress on drinking water, it is lagging on the sanitation front. Nearly two-third of India has no access to sanitation even today. Of the 1.8 million diarrhoea deaths in the world, India has 450,000.

The World Health Organisation (WHO) estimates that 80 per cent of all incidence of sickness in developing countries can be traced to water and sanitation related causes. The prevention of infections

of such an origin is one of the most important objectives of health and sanitation programmes in India. Human excreta should be disposed of in such a manner as to avoid direct or even indirect problems. According to Central Statistical Organization, only 3.15 per cent of the rural population had access to sanitation services. In other words, 600 million people living in rural areas do not have access to toilets of any type. It is a fact that disease is a challenge to a developing country like India. The poor management of the common property resources such as public toilet, drainages and the drinking water are causes for disease in the rural areas. Better management of these resources will give pollution-free and disease-free environment to the nation.

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WORLD TOILET SUMMIT 2007

DR. RAGHUVANSH PRASAD SINGH CALLS FOR FOCUSING ON COMMUNITY SANITATION

The Union Rural Development Minister Dr. Raghuvansh Prasad Singh has expressed the hope that by 2012 India will be free of defecation in open and will also be able to meet the international commitments in this regard. Addressing the World Toilet Summit 2007 in New Delhi he said his ministry is leading one of the much appreciated programmes like Total Sanitation Campaign (TSC), for promoting rural sanitation in the country. This programme has been developed after much deliberation and inputs from experts, officials and community to make it community-oriented and demand-driven. So far TSC has been very successful in accelerating the sanitation coverage from 22 percent in 2001 to 48 percent in 2007. Referring to the Nirmal Gram Puraskar (NGP), an incentive scheme to add vigour to the sanitation drive and is given to Gram Panchayats, Blocks and Districts, he said this award has motivated the Panchayati Raj Institutions (PRI) and communities tremendously in the last three years.

Moreover, the Government of India is committed to sustain this momentum by increasing its reach and fund allocation. Accordingly, the central plan outlay for rural sanitation has also been increased from Rs.740 crore in 2006-07 to Rs.1060 crore in the current year marking an increase of 43% over the previous year. Today, the programme has crossed Rs. 12,000 crore mark in its total outlay making it one of the largest sanitation programmes in the world, the Minister added.

Dr. Singh said new components like Solid and Liquid Waste Management have also been added and 10 percent of the total fund of TSC has been earmarked for it, which is important for environmental cleanliness. Also waste is a form of resource and its proper use should be promoted. In addition, efforts are being intensified to focus on school sanitation, anganwadi and community sanitation. Schools particularly are being targeted for providing them with water and sanitation facilities by next year. The Minister also emphasized to focus on the poor and downtrodden people of the country, so far excluded from the mainstream, for making our environment safe and habitable. India is complex and diverse country with 28 States, 600 districts, more than 5000 blocks, and approx. 6 lakh villages. To implement any development programme aimed at the personal level, it is, therefore, necessary that approach and strategy should take into account these facts. Our strategy should be inclusive of these groups to realize the fruits of development. Water and sanitation is the core of this development process, which must reach to all, especially those who traditionally have not had access to it, the Minister added.

Later Dr. Singh had a meeting with William-Alexander Nicholas George Ferdinand, Prince of Orange, Netherlands to share his interest and experiences about his visit to a village in Haryana regarding the implementation of TSC programme. The Prince also expressed his interest in India achieving the Millennium Development Goal. Currently, the Prince of Orange is in the Chair of UN Secretary General's Advisory Board on Water and Sanitation. This Board was set up in 2004 by Kofi Annan, former UN Secretary General.

Population Explosion and Environmental Degradation

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Environment Problems have attracted the attention of a wide cross section of people all over the World during the last two decades. People are becoming increasingly conscious of a variety of Problems like – global warming, ozone layer depletion, acid rain, famines, droughts, flood, scarcity of fuel, firewood, fodder, pollution of air and water problems from hazardous chemicals and radiation. The recent increase in industry and urbanization during the last century has brought extensive environment pollution, pollution problems to the world. The first signs of pollution problems were observed in water pollution. Later, solid waste, air, noise and radioactive pollution began to show their effect on human beings. Environment problems pose a challenge to humanity which unprecedented in its scope and complicity.

In ancient days, a natural balance was maintained between all living beings including men and plants. As we know forest plays a vital role in maintaining ecological stability. They provide protection against natural calamity like drought, floods and cyclones. But in the present days, several factors including rising population, increasing needs for fuels, wood, timber and fodder and increasing industrialization and urbanization have contributed to a large-scale environmental degradation. There is presently hue and cry, every where to protect and preserve the environment from its deteriorating condition. Man is digging his own grave by destroying the environment in various ways. The deterioration of environment is caused due to decrease in the quantity and quality of cultivable land, deforestation, increase in the proportion of harmful gasses in the atmosphere, use of pesticides and insecticides, in agriculture, rapid industrialization, increase in number of vehicles, increase in habitation in slum areas and the like. The factors responsible for environmental degradation are solely caused due to human related reasons and mostly because of growth in population by leaps and bounds.

Population Explosion : A Major Factor for Environment Degradation

Population explosion is world wide Phenomena. Presently, it affects almost all the countries of the World, particularly in underdeveloped and the

developing countries. The increased population affects the society and nation in various ways. The increased demand for resource and environmental degradation serious threats to the earth capacity to sustain human population. The idea of population bomb warn that if the population growth continues at the present rate for nine hundred year, there would be some sixty million billion people. The British Physicist J.H. Fremlin guessed that such a multitude of population may be housed in a 2000-storied building covering the entire planet. But such a catastrophic disaster will never come because the biological physical and social limiting factor will start applying the long before the frightening state. Thus, rapid and unplanned growth of population affects seriously at all levels of our social life starting from the Micro level to the Macro level.

India with a population of 102.7 crores (2001 census) is the second most populous country in the World. It covers only 2.4% of the total surface area of the World but has 15.2% of the World population of 675 crores. The rapid growth of population stands as an obstacle on the way of economic and social development. Unemployment, poverty illiteracy and ill health as the outcomes of this rapid population growth are creating numerous environmental crisis in the country. In spite of the spectacular achievements of the green revolution the food problem continues to be as grave as ever due to the tremendous increase in population.

Causes and Effects of Population Growth in India

Several factors have contributed to the rapid growth of population in India like decrease in death rate, universality of marriage, craze for male child, poverty and illiteracy etc.

Unwanted and unprecedented growth of population in India has brought about a series of severe consequences. Some of these major impacts of population growth are heavy pressure on land or surface area, increase of rural and urban unemployment problem, increasing poverty and low standard of living, illiteracy, food and housing problems, health problem.

The increasing population growth cannot survive

only on agriculture. The people migrate to urban areas, big cities and industrial centers. Such a situation is creating problems like water, air pollution, noise pollution, transportation, shortage of housing, indiscipline over crowding schools, growth of slums etc.

Water and Land Pollution

Water and land pollution are an age old problem but in this modern age, the problems like population increase, sewage disposal, industrial waste and radioactive waste etc have polluted our water resources so much so that about 70% rivers and streams of our country contain polluted water.

Water and land pollution are serious problems ever since sewage and industrial effluents are being disposed out into the river. Population growth adds both to pure water requirements and to the generation of sewage and waste products. Industries need a wider variety of chemicals and metals, which are later, discharged into rivers, streams lakes and oceans. Even if smaller town municipalities are having a difficult time dealing with the growing problem of pollution which has, of late, assumed frightening dimensions, we have still to recognize that good environment is the fundamental right of every citizen as it is essential for his physical, moral and social health. In India, 12% of people get clean drinking water, the rest 88% quench their thirst from polluted lakes, tanks, rivers and wells due to which more than three million people get affected or die of enteric diseases every year. Generally water contains iron, calcium, magnesium, manganese, silica, fluoride, nitrate, phosphates, sulphates and chloride. When the quantity of these parts increase then they affect the body system and cause destruction of health.

Due to population explosion the heavy demand of foods fertilizers, chemicals and pesticides are being used for increasing the productivity. The use of pesticides like DDT has posed a serious water pollution problem and potential hazard not only to livestock and wild life but also to other animals. The most hazardous property of the pesticides particularly organo-chlorine is its persistence in the soil, which causes long time effects.

Water pollution may not only adversely affect all the uses water is put to, such as domestic, agriculture, aquaculture, industrial, recreational, aesthetic, navigational and power generation etc but the entire aquatic ecosystem may be thrown out of gear and

may lead towards several biological imbalances – The later if it happens would be an ecological disaster.

Air Pollution

Air pollution in cities has mounted more people have crowded in rapid population growth and industrialization results in the deterioration of air quality. Utilization of coal as fuel and incomplete combustion of it give out soot, sulphur and other components into the atmosphere. Thermal power stations, iron and steel foundries, fertilizer plants, copper and aluminum smelters, oil refineries and many industries release harmful chemicals daily into the air. Air pollution are poured due to basically five sources i.e. automobiles, electric power plants, industrial processors, heating plants, transportation and indiscriminate use of biocides. The rapid increase in the number of motorcars, trucks and other engines that use petroleum, fuels have added a new dimension to the urban air pollution problem. Combined with the traffic congestion during peak hours, the hydrocarbon and other toxic chemicals emitted by motor vehicles have resulted in air pollution levels that endanger health.

Noise Pollution

With the growth of population and urbanization the number of automobiles and other vehicles have increased which produce irritable noise. In the major roads of urban areas, such sounds make a person physically and psychologically ill. The noises of communities or social gatherings are no less injurious to our health. Different festivals, processions, crackers, marriages, meetings, rallies etc produce noise by way of chanting slogans, high pitch music, dancing, speeches, songs and microphones. Noises mostly affect the work and people in hospitals, schools, and libraries etc where peaceful atmosphere is highly essential. Excessive noise expose can result in headache, fatigues, dizziness, in efficiency, high blood pressure, irritation and annoyance, nervous disorders, loss of hearing, mental stress, frustration, sleeplessness, heart attack and heart stokes etc.

Conclusion

Population has the tendency to spread out in all directions until any restriction is imposed. Three to four decades back, attempts have been made to arrest these rapid growth of population in our country by adopting family planning programme, birth control measures, providing incentives for small family, motivating and

creating awareness among the public etc in this direction. Hence, Population education needs to be given up top priority for checking the environment pollution. The situation is so given that something needs to be done quickly at grassroots level. The younger generations need to be informed. A country where 50% of the population is below 18 years, marriage is almost universal, where literacy rate is just 65.4%, where the standard of living is low and unemployment has taken on dangerous proportions, Population education seems to be most relevant. Education has a great motivational force to perform for controlling over population. Educational institutions should assume the responsibility of educating the community and the education of the masses for having small families. The population policy should touch the life of common man and should have a wider involvement of the people, the politicians, bureaucrats, the media, the students and teachers and public at large. The world is gradually becoming more crowded more polluted, less stable and less ecological sustainable. The future growth of population has to be related to the available resources. Resources decrease

as population increases, all population pressures lead to various economical pressures and environmental degradation. No doubt environment pollution is essentially a man made phenomena. It needs to be addressed immediately. Each one should be conscious for serious consequences of environmental pollution and to make the anti environmental pollution programme successful, the active involvement of people is essential.

References

1. Nanda, S.K., (2000), *Indian Education and Its Problems Today*, Kalyani Publishers, New Delhi.
2. Patra, A.K., (2004), *Environmental Studies*, Kalyani Publishers, New Delhi.
3. Satapathy, B. and Dash, A., (2004), *Environmental Studies*, Kalyani Publishers, New Delhi.
4. Singh, Sunil Kumar, (2004), Environment Studies for Undergraduate Courses: Some Observations and Suggestions, *University News*, Vol. 42, No-29,
5. Srivastava, Y.N. (1989), *Environmental Pollution*, Ashish Publishing House, New Delhi.

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Do You Know ?

There has been a general, but not global, tendency toward Reduced Diurnal Temperature Range (DTR), (the difference between high and low daily temperatures) over about 50% of the global land mass since the middle of the 20th century. Cloud cover has increased in many of the areas with reduced diurnal temperature range. The overall positive trend for maximum daily temperature over the period of study (1950-93) is 0.1°C/decade, whereas the trend for daily minimum temperatures is 0.2°C/decade. This results in a negative trend in the DTR of -0.1°C/decade.

RAINWATER HARVESTING FOR WATER SECURITY

N. Muthu ✍

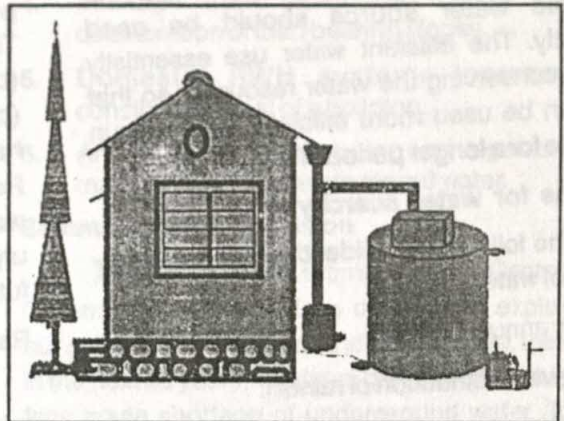
Introduction

Water is a precious resource available in nature. It is an essential constituent of all living organisms. It forms about 75 per cent of the earth's crust. Unlike most other natural resources, water does not have any substitute in its main uses.

Water availability in India

The country has only 2.5 per cent of the area, out of total geographical area of the world. India has 16 per cent of the total population of the world. But, the country has only 4 per cent of the water resources present on the earth. The country receives approximately 1,100 m.m. average rainfall annually, that too irregularly and only during limited period of two to three months. The annual available water resources per capita in India is estimated at 2,200 m³ where as it is 800 m³ in Tamil Nadu. The population of India is expected to stabilize around 1.64 billion by the year 2050. As a result, gross per capita water availability will decline from 1820s cubic meters per annum in the year 2001, to as low as 1140s cubic meters in 2050. An estimation on demand shows that the drinking water requirement of rural habitations alone would be 29 billion cubic meters (BCM) in 2050 against the present requirement of about 10 billion cubic meters.

Among the states in India, Tamil Nadu is one of the water starved states whose per capita water availability is less than the national average. The available water resources of Tamil Nadu including imported water is about 5.75 million hectare metre (MHM) or about 2,000 TMC but the demand is estimated at 7 million hectare metre or about 2,500 TMC and the gap



is to be bridged. This can be done by getting water from other states and by adopting water management practices. The average rainfall of the state is 946 millimeter received over an area of 13.0 million hectare which is about 12.3 million hectare metre (MHM) per year. But the utilizable runoff is about 2.5 MHM. The unutilizable ground water recharge would be about 2.24 MHM.

Water use

Water is an important natural resource of dire need in all the three sectors, viz., Domestic, Agriculture and Industry. World Water Development Report (2003) accounts for 8 per cent of fresh water for domestic uses and about 70 per cent for Agriculture. At global level, the domestic use of water is about 8 per cent and it is about 11 per cent in developed countries and 12 per cent in developing countries. Agriculture water use in developing countries is about 82 per cent whereas it is limited to 30 per cent in developed countries. Globally industrial use of water is about 22 per cent which is as high as 59 per cent in developed countries and 6 per cent in developing countries.

The demand for water for Household, Industry and Irrigation is increasing due to growth of population, large scale industrialization and for producing food needed for the uncontrolled population. The increasing demand for water results in supply-demand gap for water. To meet the supply-demand gap, the available water source should be used efficiently. The efficient water use essentially means conserving the water resources so that they can be used more efficiently and remain available for a longer period of time.

Reasons for water scarcity

The following are identified as the major causes of water scarcity:

1. Low annual rainfall.
2. Uneven distribution of rainfall.
3. Ever increasing population.
4. Competing demand of ground water for irrigation, industrial and other purposes.
5. Over exploitation of ground water.
6. Excessive draws of ground water without considering the recharge.
7. Improper use of surface and ground water.
8. Misuse of precious water treating it as a free and ever lasting commodity.
9. Lack of awareness among masses about the need of ground water recharge.
10. Lack of scientific input and management of ground water.
11. Lack of sustainability principle application in draws of ground water.
12. Improper cultivation practices.
13. Low or no electricity tariff for agricultural and industrial use.
14. Pollution of available water resources.
15. Increasing building constructions and roads.
16. Letting river water directly into the sea.
17. Deforestation.

Approaches needed to prevent water scarcity

According to National water policy, water is a prime natural resource for humans and hence, a precious national asset. Nowadays, it is hard to find fresh water due to growth of population, agricultural and industrial activities. Thus, approaches like (a) Inter-linking of rivers, (b) Utilizing increased return flow from irrigation, (c) Conservation of water through rain water harvesting and ground water recharge (d) Recycling and reuse of municipal and industrial waste water, (e) Inter-Basin transfer, etc. are urgently needed to prevent water scarcity in future.

Rain Water Harvesting (RWH)

Water scarcity situation has caused a prime concern to the farmers, scientists, water technologists, irrigation engineers and the policy makers. Therefore, how is this scarce resource to be managed effectively and efficiently under scarcity condition? The answer in a simple term, is harvesting rain water. Rain water harvesting is the collection and storage of rainfall, runoff from any catchments or watershed for subsequent use.

Harvesting Techniques

There are two main techniques of rain water harvesting (1) Rain water storage on surface for future use and (2) Recharge to ground water. The storage of rainwater on surface is a traditional technique and structures used are underground tanks, check dams, weirs etc. Recharge of ground water is a new concept of rain water harvesting and the structures generally used are recharge boreholes and wells, rooftop harvesting, pits and shafts, trenches, hand pumps, lateral shafts with bore wells, contour bunding, contour trench, injection wells, connector wells, dug well recharge, interwatershed transfer, jacket well technique, rainwater recharged bore well technique, etc.

Advantages of RWH

Following are identified as important advantages of rain water harvesting.

1. Rain water harvesting system collects and stores water within users reach.
2. It assures a more continuous access to water.
3. Rain water harvesting promotes self-sufficiency. It also promotes water conservation.
4. Rain water harvesting also conserves energy as the energy input needed to operate a centralized water system is bypassed.
5. It provides an alternative source of good quality water in the area where ground or surface water is chemically contaminated.
6. Rain water is one of the purest sources of water available and does not get polluted. As rain water is soft, it can significantly reduce the quantity of detergents and soaps need for cleaning.
7. It is easy to construct with locally available materials and labour.
8. It requires low investment, construction and operations.
9. Surface water storage structure improves the yield of hand pumps and wells.
10. It provides an essential reserve in times of emergency or breakdown of public water supply systems.
11. It increases the productivity of land.

Disadvantages of RWH

Rain water harvesting system has some limitations.

1. The success of rain water harvesting depends upon the quantity and frequency of rainfall. Thus, it may fail during dry weather.

2. Low storage capacities limit the water harvesting benefits and large capacities may not be economical.
3. Storage tanks can be breeding ground for mosquitoes or unsafe for small children.
4. Leakage from tanks can cause the deterioration of load bearing slopes.
5. Domestic RWH systems increase construction cost of a building.
6. Animal waste, bird dropping and vegetable matter may contaminate stored water.

Summary and Conclusion

According to an estimate of the Central Ground Water Board, if we continue to exploit our ground water sources indiscriminately, then in the next 20 years, 15 states of the country may face acute shortage of underground water. To tide over the present crisis, we have to keep in mind that we cannot make more rain, so we have to manage water better. Thus, managing water supplies is one of the critical issues facing humanity and a real challenge of this century. Due to improper management of water in India, even the people living in Cherapunji, the place that has the world's highest rainfall, experience water scarcity. Hence, the government should adopt latest water management technology to construct and a thrust area with more allocation of money. Higher budgetary support should be given to rain water harvesting and watershed schemes to recharge our underground water sources. The government should take necessary steps to create awareness among farmers, industrialists and the public in general about the need for minimizing wastage of water.

– Devanga Arts College,
Aruppukkottai

Azim Premji has tapped India's abundant engineering talent to transform a family vegetable oil firm, Wipro Ltd., into a technology and outsourcing giant. By serving Western manufacturers, airlines and utilities, the company has brought Premji a fortune believed to be greater than that of any other Muslim outside of Persian Gulf royalty.

Study: value of forests should be recognised and compensated

Special Correspondent

NEW DELHI: The forests in Uttarakhand have been valued at \$2.4 billion or Rs.107 billion per year in terms of services they provide to the people. This needs to be recognised and compensated, says a new report.

The average value of \$1,150 per hectare per year for the services provided needs to be reflected in our economic planning and compensated for, according to the study 'Valuation of Ecosystem Services and Forest Governance, in Uttarakhand, as a scoping study,' brought out by LEAD India and its partner organisation, Central Himalayan Environmental Association (Uttarakhand). The report evaluates and quantifies the services rendered by the Himalayan ecosystem in the State, and is the first comprehensive collation of scientific information around various Ecosystem Services using mainly secondary sources.

Ecosystem Services is defined as a wide range of conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil hu-

• **Valuation, a balanced approach for conservation of ecosystems**

• **Forests' contribution reflected in SDP is only 3.50 per cent**

man life. As many as 32 such services, including carbon sequestration, climate management, hydrological regulation, timber, soil conservation, pollination and other non-timber forest products have been identified so far.

The report described valuation as a balanced approach for conservation of ecosystems that calls to conserve whatever remains and restore it in areas where it is possible, rather than spending time and resources on selecting biodiversity rich areas.

Despite making considerable contribution in Uttarakhand's economic and ecological systems, forests do not get proper recognition for their contribution in the State Domestic Product

(SDP) in the absence of proper valuation and lack of information to decision-makers.

Its contribution reflected in the SDP is only 3.50 per cent (Rs.5,109.6 million) as only few goods and services from these forests are marketed and thus accounted in the current calculus, the report suggests.

Uttarakhand is rich in endemic biodiversity and the forests provide ecosystem services of high magnitude to the Indo-Gangetic Plain in terms of regulated water supply and nutrients rich soil through its river connections, thereby sustaining the livelihoods of about 500 million people inhabiting the area. Livelihoods for more than 5 million mountain-dwellers are also mainly forest-based.

The study further says that whatever success the people in mountains have achieved in conserving their forests, they have been able to do so without any access to modern energy sources.

From equity point of view alone, the poor people in Uttarakhand should be given support to have alternatives to biomass fuel.

24-12

TOWARDS GREEN RAJASTHAN

Dr. Bhagchand Badhhal ✍

PITCHER METHOD OF IRRIGATION

Geographically, Rajasthan is one of the biggest states in our country. The area of the state is 10.4% of total geographical area of India and it accommodates 5.6% population of the country whereas the available ground water resources are only 1% of the total water resources of the country. The availability of water depends on rain and as far as rain is concerned, Rajasthan is one of the states with minimum rain. As a result of this, the biggest desert of India is found in Rajasthan. Water supply is less when compared to the demand for water. Moreover, the need for water is increasing due to the growing population and the process of development. The forests in the state is also a cause of concern. So desert is spreading continuously. Under these hostile circumstances, we can transform deserted Rajasthan into 'GREEN RAJASTHAN' by judicious use of water. The state government is also implementing various programmes for water conservation accepting these challenges. By keeping in view these threatening problems and use of the acquired knowledge during my study in agriculture science, I have tried the following methods / experiments for water conservation, rural sanitation (village cleanliners), conservation of environment and plantation which are successful.

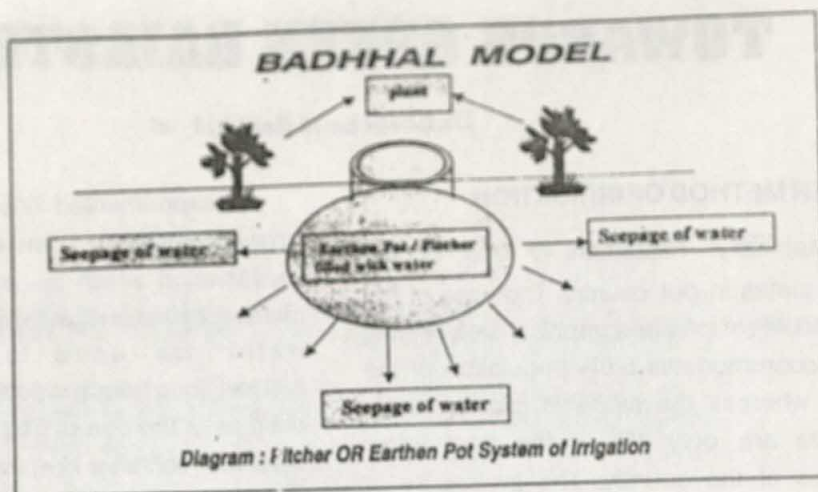
1. Dudu Model (A plantation cum ground recharge cum sanitation model).
2. Pitcher/Earthen pot irrigation model (Badhhal Model).

I experimented one unique method of irrigation cum plantation and water conservation which is pitcher / earthen pot method. In this unique method, pitcher drinking water are used for pot method. A 3 feet long trench is dug which is as wide and deep as of the size of pitcher and the trench is filled with soil after keeping the pitcher in the centre of the trench. The distance between pitchers depends upon the type of plants e.g. The pitchers are placed at the distance of 5-6 meters for Neem, Khejari, Rohida, Shisham, etc. The trees are planted on both the sides or one side (as per need) and pitcher is filled with water. If the pitcher is old and used, then one needle size hole is made towards trees and if the pitcher is new then it is not required to make hole because water seeps through it and reaches the roots of plant as per the need. pitcher is covered with a lid after filling it up to save water.

Even the Supreme Court of India has taken cognizance of the problem of the continuously dropping water-table. The continuous ground water exploitation has led to serious problems with brackish/alkaline water.

Ground water must be viewed as a national, rather than regional or local resource and an optimum use model should be designed for irrigation. The pitcher method of irrigation is such a type which optimizes the irrigation water in case of trees / crops planted at larger spacings.

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It has following advantages

1. Water can be saved up to 80%.
2. Mortality rate of plants is reduced or survival rate increases very much.
3. Double benefits can be gained if fruit trees are planted in this method.
4. If trees are planted in this method by forest department, then there is sure increase in the forest cover and decreasing forest areas can be controlled.
5. This is the best technique for environment and water conservation.
6. The small industries of making pitcher would be encouraged.
7. It is the best method for greening the desertic areas.

A working model of this method of irrigation can be seen at: (1) Residence (R-9), Sub Divisional Officer, Jhunjhunu, Bidokani Johari of village Khidarsar, near 220 KV (2) GSS, Cementery of village Bhojasar, (3) Govt. Senior Secondary School Budana, (4) Govt. Primary School, Noji ki Dhani, Nua (5) Govt. Upper Primary School, Nau, (6) Govt. Secondary School, Patusari, Govt. Middle School Kilinda (7) Sub Tehsil premises Malsisar, Nidhi Forest, Vrindawan, Bharonda Kalan, (8) Govt.

Secondary School, Bibasar (9) Swarn Jayanti Stadium, Jhunjhunu and S.S. Morarka Govt. College Jhunjhunu. (All above places are in Jhunjhunu, Rajasthan)

Approximately 3000 trees have been planted and nourished successfully at the above places by this method. This is a practical method of plantation under adverse scarcity conditions. If plantation is done on this method, the dream of 'GREEN RAJASTHAN' can become true.

Approximately 5000 plants have been planted through my personal efforts by various methods of plantation. The above two methods are most successful for plantation on the basis of various experiments. If the forest department adopts the above methods of plantations then expected increase of the forest cover can be recorded. All Government/Non-governmental organization (NGOs), volunteer organizations, Departments, Public representatives and all citizens should co-operate to make these efforts successful keeping in view the interest of the state and people.

Trees are our future. Trees only give life giving air. So let's plant more and more trees.

– S.D.M. Jhunjhunu, Rajasthan.

UNDP: help the poor cope with climate change risks

P. Sunderarajan

NEW DELHI: United Nations Development Programme's Resident Representative in India, Maxine Olson, on Tuesday called for scaling up of efforts to assist the poorest in the country in adapting to the threats posed by global climate change.

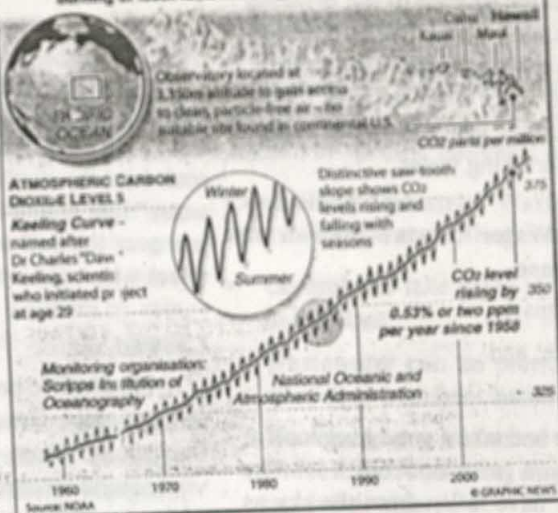
Releasing a report brought out by the UNDP on climate change, she said that even as India had made a steady progress to improve the people's health, education, and wealth, a large human development backlog still existed. Superimposing climate change risks on this deficit could increase inequalities.

The report, "Fighting climate change: human solidarity in a divided world," emphasised that the impacts of climate change on poor people's human development prospects around the world were significantly underestimated and warned that the world was drifting towards a tipping point that could lock the poorest countries and their poorest citizens in a downward spiral, leaving hundreds of millions facing malnutrition, water scarcity, ecological threats and loss of livelihood.

In India, the report said, changing rainfall patterns on account of climate change could result in drops in agricultural productivity, directly affecting 60 per cent of the population, which relied on

50 years of continuous CO₂ measurement

The longest continuous measurement of atmospheric carbon dioxide - still ongoing - began in November 1957 at the Mauna Loa Observatory in Hawaii, inspired by a growing awareness among scientists that the burning of fossil fuels had the potential to alter the climate.



the sector. The continued retreat of the Himalayan glaciers could increase water scarcity, affecting 500 million people in South Asia.

It recommended that \$86 billion be transferred from the developed countries to the developing ones between now and 2016, considering that the former bore the responsibility for climate change.

Stressing that there was no hard and fast line separating the dangerous climate change from a safe one, the report called for a global carbon

budget that would ensure that emissions of greenhouse gases dropped to sustainable levels. It recommended that the developed countries make deep and early cuts to their emissions so that by 2050, they were emitting 80 per cent less carbon than in 1990.

It also called for the setting up of a global climate change mitigation facility, which would provide finance for the incremental costs of low-carbon energy investments in the developing countries, consistent with achieving shared climate change goals.

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Water, Water Pollution and Water Education

R B Vanabatte

(Lecturer, SSB College of Education, Shrirampur, Dist. Ahmednagar-413709 MS)

Everybody knows the problem with unsafe drinking water. At home, we narrowly give it a thought. Usually, we are right. But the sources of our drinking water are constantly under siege from naturally occurring events and human activities that pollute. Source water is untreated water from streams, rivers, lakes, or underground aquifers, which is used to supply private wells and public drinking water.

Preventing Drinking Water Contamination at the Source makes Sense

- Good public health sense;
- Good economic sense; and
- Good environmental sense

Get a glass of water and take a good long look at the water. Now — can you guess how old it is? The water in your glass may have fallen from the sky as rain, but the water itself has been around pretty much as long as the earth has!

Your glass of water was part of the ocean, lakes or the wells. The earth has a limited amount of water. That water keeps going around and around and around and around that we call the "Water Cycle". This cycle is made up of a few main parts:

- Evaporation (and transpiration)
- Condensation
- Precipitation
- Collection

Evaporation

Evaporation is when the sun heats up water in rivers or lakes or the ocean and turns it into vapor or steam. The water vapor or steam leaves the river, lake or ocean and goes into the air.

Condensation

Water vapor in the air gets cold and changes back into liquid, forming clouds. This is called condensation.

Precipitation

Precipitation occurs when so much water has condensed that the air cannot hold it anymore. The

clouds get heavy and water falls back to the earth in the form of rain, hail, sleet or snow.

Collection

When water falls back to earth as precipitation, it may fall back in the oceans, lakes or rivers or it may end up on land. When it ends up on land, it will either soak into the earth and become part of the "ground water" that plants and animals use to drink or it may run over the soil and collect in the oceans, lakes or rivers where the cycle starts all over again.

Ground Water

Ninety-five per cent of all fresh water on earth is ground water. Ground water is found in natural rock formations. These formations, called aquifers, are a vital natural resource with many uses. Nationally, 53% of the population relies on ground water as a source of drinking water. In rural areas this figure is even higher. Eighty one per cent of community water is dependent on ground water. Although the 1992 Section 305(b) State Water Quality Reports indicate that, overall, the Nation's ground water quality is good to excellent, many local areas have experienced significant ground water contamination. Some examples are leaking underground storage tanks and municipal landfills.

Water Pollution and Society

Comprising over 70% of the Earth's surface, water is undoubtedly the most precious natural resource that exists on our planet. Without the seemingly invaluable compound comprised of hydrogen and oxygen, life on Earth would be non-existent: it is essential for everything on our planet to grow and prosper. Although we as humans recognize this fact, we disregard it by polluting our rivers, lakes, and oceans.

Subsequently, we are slowly but surely harming our planet to the point where organisms are dying at a very alarming rate. In addition to innocent organisms dying off, our drinking water has become greatly affected, as is our ability to use water for recreational purposes. In order to combat water pollution, we must understand the problems and become part of the solution.

Types of Water Pollutants

According to the American College Dictionary, pollution is defined as: "to make foul or unclean; dirty." Water pollution occurs when a body of water is adversely affected due to the addition of large amounts of materials to the water. When it is unfit for its intended use, water is considered polluted. Two types of water pollutants exist:

- **Point source:** Point sources of pollution occur when harmful substances are emitted directly into a body of water. The Exxon Valdez oil spill best illustrates point source water pollution.

- **Nonpoint source:** A nonpoint delivers pollutants indirectly through environmental changes. An example of this type of water pollution is when fertilizer from a field is carried into a stream by rain, in the form of run-off, which in turn affects aquatic life.

The technology exists for point sources of pollution to be monitored and regulated, although political factors may complicate matters. Nonpoint sources are much more difficult to control. Pollution arising from nonpoint sources accounts for a majority of the contaminants in streams and lakes.

Classifying Water Pollution and Waste Water Treatment

The major sources of water pollution can be classified as municipal, industrial, and agricultural.

Municipal Water Pollution: It consists of waste water from homes and commercial establishments. For many years, the main goal of treating municipal wastewater was simply to reduce its content of suspended solids, oxygen-demanding materials, dissolved inorganic compounds, and harmful bacteria. In recent years, however, more stress has been placed on improving means of disposal of the solid residues from the municipal treatment processes.

The Basic Methods of Treating Municipal Wastewater

Primary Treatment, including grit removal, screening, grinding, and sedimentation;

Secondary Treatment, which entails oxidation of dissolved organic matter by means of using biologically active sludge, which is then filtered off.

Tertiary treatment, in which advanced biological

methods of nitrogen removal and chemical and physical methods such as granular filtration and activated carbon absorption are employed. The handling and disposal of solid residues can account for 25 to 50% of the capital and operational costs of a treatment plant.

Industrial water pollution: The characteristics of industrial waste waters can differ considerably both within and among industries. The impact of industrial discharges depends not only on their collective characteristics, such as biochemical oxygen demand and the amount of suspended solids, but also on their content of specific inorganic and organic substances.

Controlling Industrial Wastewater: Three options are available in controlling industrial wastewater.

- Control can take place at the point of generation in the plant;
- Wastewater can be pretreated for discharge to municipal treatment sources;
- Wastewater can be treated completely at the plant and either reused or discharged directly into receiving waters.

Agricultural water pollution: Agriculture including commercial livestock and poultry farming is the source of many organic and inorganic pollutants in surface water and groundwater. These contaminants include both sediment from erosion cropland and compounds of phosphorus and nitrogen that partly originate in animal wastes and commercial fertilizers. Animal wastes are high in oxygen demanding material, nitrogen and phosphorus, and they often harbor pathogenic organisms.

Wastes from commercial feeders are contained and disposed of on land; their main threat to natural waters, therefore, is from runoff and leaching. Control may involve settling basins for liquids, limited biological treatment in aerobic or anaerobic lagoons, and a variety of other methods.

Raw sewage includes waste from sinks, toilets, and industrial processes. Treatment of the sewage is required before it can be safely buried, used, or released back into local water systems. In a treatment plant, the waste is passed through a series of screens, chambers, and chemical processes to reduce its bulk and toxicity. The three general phases of treatment are primary, secondary, and tertiary. During primary treatment, a large percentage of the suspended solids and inorganic material is removed from the sewage. The focus of secondary treatment is reducing organic

material by accelerating natural biological processes. Tertiary treatment is necessary when the water will be reused; 99% of solids are removed and various chemical processes are used to ensure the water is as free from impurity as possible.

Water Resource Management Report

1. Over 75% of the rural population (or 520 million people) in India is not provided with public water supply facilities.
2. Achievements in sanitation coverage have been less extensive, due to the lower attention it received compared with water supply.
3. Only 3.6% of the rural population is covered at present; however, actions to improve coverage of sanitation have been stepped up recently, through provision of subsidies and technical assistance for household construction of sanitation facilities.
4. National guidelines and investments in the rural water supply and sanitation (RWSS) sector, which have traditionally focused on extending coverage to rural areas, neglected to ensure that the quality of services to rural areas remained adequate.
5. Public RWSS services today clearly do not adequately serve the needs of user communities because of such factors as poor design and construction, lack of attention to user needs, or lack of financial viability.
6. There needs to be a transfer of ultimate ownership and responsibilities from the government to the users and their communities in order for the assets and services to be sustainable.
7. There must also be a shift to a demand-driven approach, which provides users with the services they want and are willing to pay for.

Global Water Pollution

Nearly 1.5 billion people lack safe drinking water and that at least five million deaths per year can be attributed to waterborne diseases. With over 70% of the planet covered by oceans, people have long acted as if these very bodies of water could serve as a limitless dumping ground for wastes.

Raw sewage, garbage, and oil spills have begun to overwhelm the diluting capabilities of the oceans, and most coastal waters are now polluted. Beaches

around the world are closed regularly, often because of high amounts of bacteria from sewage disposal, and marine wildlife is beginning to suffer.

Water Quality

Newly industrialized countries such as China, India, Thailand, Brazil, and Mexico are now facing the following issues simultaneously. Water quality is closely linked to water use and to the state of economic development.

In industrialized countries, bacterial contamination of surface water caused serious health problems in major cities. Development of the sewage networks and waste treatment facilities in urban areas has to be expanded tremendously.

However, the rapid growth of the urban population (especially in Latin America and Asia) has outpaced the ability of governments to expand sewage and water infrastructure. While waterborne diseases have been eliminated in the developed world, outbreaks of cholera and other similar diseases still occur with alarming frequency in the developing countries.

Since World War II and the birth of the "chemical age", water quality has been heavily impacted worldwide by industrial and agricultural chemicals. Eutrophication of surface waters from human and agricultural wastes and nitrification of groundwater from agricultural practices has greatly affected large parts of the world. Acidification of surface waters by air pollution is a recent phenomenon and threatens aquatic life in many areas of the world.

What Man is Doing

- He is making land of old wells, lakes, tanks, rivers and seas for housing and commercial use.
- He is using ground water carelessly.
- He is using political power as drinking water vs. commercial water.
- He is making rivers polluted as gutters.

Ways to Combat Water Pollution

Clearly, the problems associated with water pollution have the capabilities to disrupt life on our planet to a great extent. In developed countries, these general types of pollution have occurred sequentially with the result that most developed countries have successfully dealt with major surface water pollution.

The following points are just a few of the many ways in which we, as humans, have the ability to combat water pollution:

- i. The government alone cannot solve the entire problem. It is ultimately up to us, to be informed, responsible and involved when it comes to the problems we face with our water.
- ii. We must become familiar with our local water resources and learn about ways for disposing harmful household wastes so they don't end up in sewage treatment plants that can't handle them or landfills not designed to receive hazardous materials.
- iii. In our yards, we must determine whether additional nutrients are needed before fertilizers are applied, and look for alternatives where fertilizers might run off into surface waters.
- iv. We have to preserve existing trees and plants, new trees and shrubs to help prevent soil erosion and promote infiltration of water into the soil. Around our houses, we must keep litter, pet waste, leaves, and grass clippings out of gutters and storm drains.

Water Education

Water has an economic value in all its competing use and should be recognised as an economic good. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment. Water education should focus on :

- Identifying critical water issues of local, regional and global importance on the basis of ongoing assessment; Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels;
- Promoting suitable mechanism to raise awareness about critical water issues at all levels of decision making bodies;
- Facilitating arrangements for providing advice and relevant information to institutions and decision making;
- Sponsoring programmes and actions to promote policies and strategies for comprehensive water resources planning and management and to contribute to the resolution of issues related to trans-boundary waters, including river and lake basins, aquifers and wetlands;

- Promoting the implementation of effective policies and strategies for integrated management of water demand and encourage appropriate actions by concerned organisations.
- Assisting in ensuring availability and accessibility of water of suitable quality for the poor and disadvantaged.

Principles of Water Education

Some guiding principles of water education can be as follows:

- Water education should consider environment in its totality.
- Water education should be a life long process.
- Water education should be interdisciplinary in its approach.
- Water education should be considered to respond to the situational needs which vary between and within countries.
- Water education should focus on complexity of water problems and develop critical thinking and problem solving skills.
- Water education should utilize variety of learning environmental and educational approaches to teaching and learning with lots of practical activities.

Objectives of Water Education

The objectives for Water Education can be as follows:

1. To help individuals and social groups to gain variety of experience with the water use to acquire a basic understanding of water use and its associated problems.
 - To inform where and how much water is available to use and how much water is required by our population.
 - To know the need and importance of water for living things.
 - Inform the availability and proper use of water.
2. To help individuals and social groups acquire social values for working towards the solution of water problems and to foster a dialogue between these groups.
 - To educate people to eliminate ignorance and misunderstandings of old water in house.

- Make awareness to keep water sources clean.
3. To help individuals and social groups develop a sense of responsibility and urgency regarding water problems and to foster a dialogue between these groups.
 - Enhance the awareness for the planting and conservation of forests.
 4. To help individuals and social groups the skills for working towards the solutions of water problems and to foster a dialogue between these groups.
 - To conserve and plan the drinking water, ii. To increase the ground water level.
 - Save waste water through tabs, tanks, lakes, canals and educate to reuse the waste water.

Methods for Teaching

Some of the methods of teaching water education can be as follows:

- Use of traditional mode of interaction such as folklore, folk art, puppetry etc.
- Use of traditional media with focus on print materials.
- Use of modern media like TV, VCR, different types of projectors, etc.
- Learner centered and activity oriented approaches. Organisation of group discussions, workshops, seminars and conferences on water conservation for college and school students and teachers.
- Innovative teaching-learning strategies like role-playing, simulation exercises, case studies etc.
- Publish interviews related to water education through newspapers, magazines, radio, T.V. and channels.
- Prepare and publish books and CD's to make awareness of the water use.
- Arrange competitions like essay writing, elocution, paintings, wall papers and slogans.

Conclusion

We all should be aware of the importance of the environmental and water issues. One sixth of the world's population has no access to fresh drinking water. What is even more dramatic is that there are

fears of war over water in the coming years if the situation remains the same. Water is an issue of extreme importance to humankind. Half the world's population does not have access to proper sanitation facilities. Water and environment are important from various other aspects such as sanitation and health, water and health, pollution and health etc.

Awareness and education will most assuredly continue to be the most important ways to prevent water pollution. If the water pollution continues, life on earth will suffer severely. Politicians must think of sustainable development rather than economic expansion. Conservation strategies have to become more widely accepted, and people must learn that energy use can be dramatically diminished without sacrificing comfort.

Important Terms

Aquifers - natural rock formations, which contain ground water.

Eutrophication - The process of slowly filling in a water body with sediments and organic matter.

Non point source - delivers pollutants indirectly through environmental changes. One way in, which this occurs, is through run-off.

Pathogens - or disease producing organism.

Point source - occurs when harmful substances are emitted directly into a body of water. One way in which this occurs, is when someone throws a coke can into a body of water.

Pollution - to make foul or unclean; dirty.

Sediments - minerals or organic matter deposited by water, air, or ice...matter which settles to the bottom a liquid.

References

1. Brassard, PG (1996). Wetlands and Water Pollution Boston Coll. Environ. AFF. Law Rev., Vol. 23, no. 4, pp. 885-919, 1996.
2. Gannon, RW; Osmond, DL; Humenik, FJ; Gale, JA; Spooner, J *Agricultural Water Quality Water Resour Bull*, vol. 32, no. 3, pp. 437-450, 1996.
3. National Water Policy—India.
4. <http://wrmin/development/default6.htm>, Water Resources in India. □

1 vaccine not enough

By OUR SPECIAL
CORRESPONDENT

MALARIA

Hyderabad, Nov. 10: A single vaccine may not be sufficient to control malaria, says a new study. This major health nuisance needs to be tackled through specific vaccines for different strains of malarial parasite.

The study by the city-based Centre for Cellular and Molecular Biology and the National Institute for Malaria Research revealed that different vaccines need to be developed to prevent different isolates of plas-

modium falciparum, the causative agent of malaria.

"The C-terminal region of merozoite surface protein-1 is one of the leading candidates for vaccination against the erythrocytic stages of malaria. However, a major concern in the development of MSP-1 based malaria vaccine is the polymorphism observed in different geographical plasmodium falciparum isolates," the study points out. The results of the study

also revealed predominance of a particular type of allele among Indian field isolates. Seven such variant forms were isolated in a single geographical location. This simply means there should be seven different vaccines each targeting a particular isolate, in the Indian context.

Malaria is one of the major causes of death from infection in India as in other developing countries. Development of an effective malaria vaccine may reduce malaria-associated severe morbidity and mortality.

DL 11-11-07

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There are many who believe that a drink a day will keep the cardiologist away. Does it mean that you should start drinking even if you are a teetotaler just to save your heart? The answer is a strict no, because unlike with other medicines which are taken in the form of tablets, alcohol consumption is a social event which easily goes out of control and therefore not easily resorted to.

BODY MIND SOUL

Alcohol: Myths & Realities

Dr. S. Srinivasan

The latest American Heart Association guidelines caution people not to start drinking alcohol if they do not already drink alcohol, according to a review of the advantages and disadvantages of alcohol intake on cardiovascular health published in the August 23, 2007 Online First issue of the Journal of the American College of Cardiology.

"Accumulating scientific evidence indicates that light to moderate drinking done on a daily basis may significantly reduce the risks of coronary heart disease (CHD) and all-cause mortality," write James H. O'Keefe, MD, FACC, and colleagues from the Mid America Heart Institute in Kansas City, Missouri. "In contrast, excessive alcohol intake and binge drinking are toxic to both the heart and overall health and are the third leading cause of premature death among

Americans. The purpose of the present review is to: 1) outline the specific benefits and risks of alcohol, and the threshold of intake at which drinking becomes a health danger rather than an advantage; 2) detail the mechanisms whereby alcohol confers cardioprotection; and 3) discuss the ideal quantities, drinking patterns, and beverages, and which individuals are most likely to benefit."

Research to date has shown J-shaped relationships between alcohol consumption and several adverse health outcomes, including all-cause mortality, coronary heart disease, diabetes, hypertension, congestive heart failure, stroke, dementia, and so on. (J-shaped means that the above illnesses decline with alcohol intake up to a short period, but increase steeply if alcohol is consumed in excess).

vational studies, residual unmeasured confounding factors could be contributing to apparent benefits that seem to be associated with light to moderate drinking.

Heavy drinking has caused significant individual and societal problems and morbidity. In the past 15 years, the rates of alcohol abuse and binge drinking have been increasing, according to the findings of some studies. Alcohol abuse causes 100,000 deaths each year in the United States, and it has been deemed the third largest preventable cause of death. Excessive alcohol consumption has been associated with increased risks for all-cause mortality, motor vehicle crashes, stroke, cardio-myopathy, abnormal cardiac rhythms, sudden cardiac arrest, suicide, cancer (particularly of the breast and gastrointestinal tract), cirrhosis, foetal alcohol syndrome, and sleep apnoea.

"Sobering statistics warn that moderate daily drinking is a slippery slope that many individuals cannot safely navigate," the study authors conclude. "The latest American Heart Association guidelines caution people not to start drinking if they do not already drink alcohol, because it is not possible to predict in which people alcohol abuse will become a problem. Until we have more randomized outcome data, and tools for predicting susceptibility to problem drinking, it would seem prudent to encourage physicians and patients to focus on more innocuous interventions to prevent CHD."

Dr. S. Srinivasan

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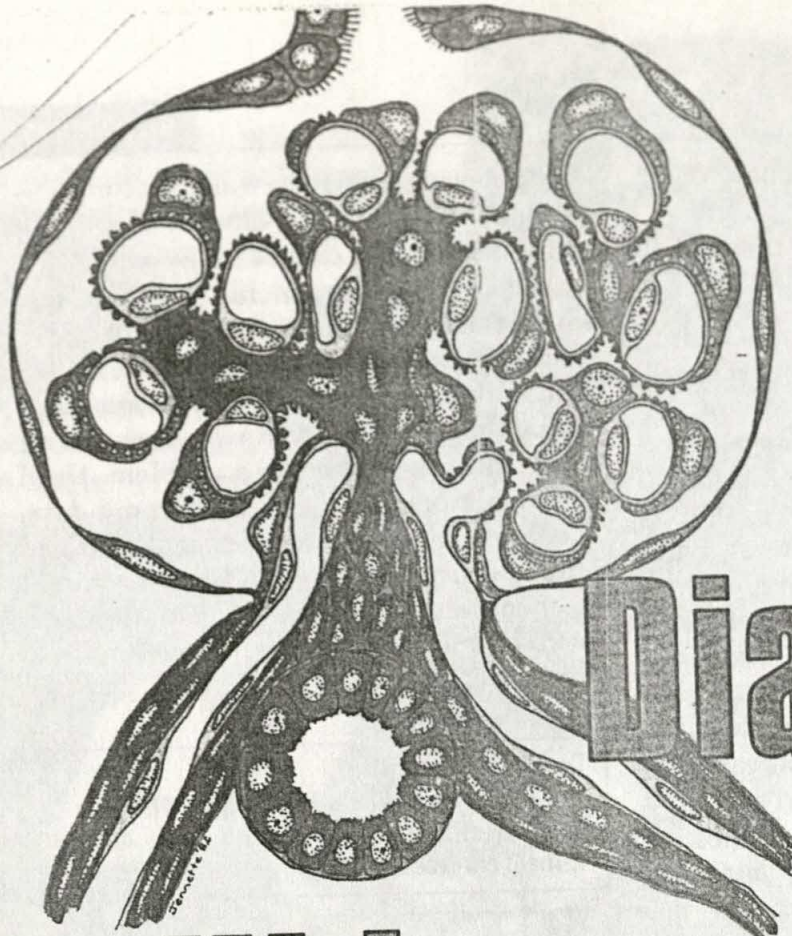
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Diabetes and Kidney Disease

Diabetes is the number one cause of kidney failure. Almost a third of people with diabetes develop kidney disease (also called diabetic nephropathy).

People with diabetes and kidney disease do worse overall than people with kidney disease, alone. This is because people with diabetes tend to have other long-standing medical conditions, like high blood pressure, high cholesterol and blood vessel disease (atherosclerosis). People with diabetes also tend to have other kidney-related problems, such as bladder infections, and nerve damage to the bladder.

Kidney disease in type 1 diabetes is slightly different than in type 2 diabetes. In

type 1 disease, kidney disease begins acutely and may start at an early or young age. Overt disease, when present, is obvious after about 15 years of having type 1 diabetes.

In type 2 diabetes, many patients have kidney disease at the onset, when they are diagnosed with diabetes. Because type 2 diabetes is frequently found in the middle or older aged person with other chronic medical conditions, kidney disease may have been caused by other conditions.

What Are the Symptoms of Kidney Disease?

Although there are often no symptoms with early kidney damage, they may include:

- Swelling of the hands, feet and face.
- Weight gain.
- Itching (end stage kidney disease) and extremely dry skin.
- Drowsiness (end stage kidney disease).
- Blood in the urine (rare).
- Abnormalities in the hearts' regular rhythm, because of increased potassium in the blood.
- Muscle twitching.

As kidney damage progresses, your kidneys cannot remove the waste from your blood. The waste then builds up in your body and can reach poisonous levels, a condition known as uraemia. People with uraemia are often confused or comatose. Uraemia is worsened by high blood pressure.

How Is Kidney Disease Diagnosed?

The disease is detected by finding protein in the urine. That's why you should have your urine tested every year.

How Is Kidney Disease Treated?

Lowering blood pressure and maintaining blood glucose control are absolutely necessary to slow the progression of kidney problems. Some medicines called angiotensin converting enzyme (ACE) inhibitors can help slow down the progression of kidney damage. Although ACE inhibitors -- including Altace, Lotensin and Capoten -- are usually used to treat high blood pressure and other medical problems, they are often given to people with diabetes to prevent complications, even if their blood pressure is normal.

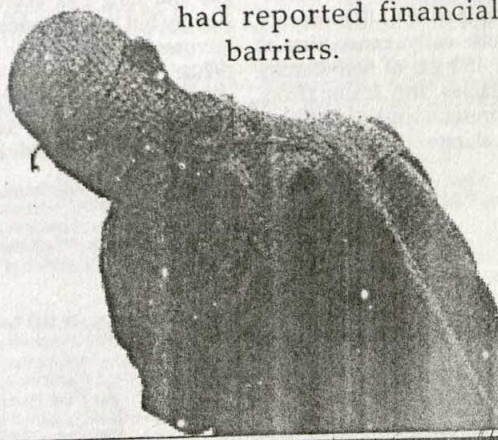
If a person has side effects from taking ACE inhibitors, another class of drugs called

angiotensin receptor blockers can be given instead.

If not treated, the kidneys will continue to fail and larger amounts of proteins can be detected in the urine. Advanced kidney failure requires treatment with dialysis or a kidney transplant.

A broken bank balance can break your heart too

Patients who have trouble paying their medical bills do significantly worse in the year after heart attacks the patients under less financial pressure, a new study finds. In the study, which appeared last week in *The Journal of the American Medical Association*, the researchers surveyed almost 2,500 patients when they were hospitalized for heart attacks. Although most of the patients were insured, the researchers found that almost one in five reported that financial barriers had led them to avoid health care over the previous year. More than one in 10 said they had not been able to afford some medications. Dr Harian M. Krumholz of Yale and his co-authors found that a year after the heart attacks, there were 12 per cent more cases of angina among the patients who had reported financial barriers.



Eat more fruits, vegetables to check cancer: report

"Reduce intake of sugary drinks, fast food, red meat"

Aarti Dhar 11-11-07

NEW DELHI: Indians need to increase their intake of fruits and non-starchy vegetables while cutting down on sugary drinks, fast food and red and processed meat to check cancer.

According to the new Global Report on Diet and Cancer brought out by the World Cancer Research Fund and the American Institute for Cancer Research, Indians must also enhance their physical activities.

Recommendations

The report, drafted by a panel of 21 doctors and experts, has made 10 recommendations related to individual living habits globally that stress the need to avoid excess body weight and a bulging waistline. Both are now known to increase the risk of post-menopausal breast cancer, endometrial cancer, oesophageal cancer and cancer of the gall bladder.

Half an hour of vigorous exercise or an hour of moderate exercise daily, consuming at least 400 gm of non-starchy vegetables and fruits (from the present level of 130 gm/day), along with fibre-rich un-

refined or minimally refined cereals, grains and pulses, legumes and reducing the consumption of red meat to less than 500 gm a week are some other suggestions made by the panel.

Exclusive breast-feeding for six months reduces the risk of breast cancer, both for the mother and the child when they grow up.

India has a high incidence of cancer, the commonest among men being those of the oral cavity and pharynx and among women cancer of the cervix.

Although these cancers have declined since the late 1970s, the incidence remains high. Cancer of the oesophagus and lung has decreased slightly but breast cancer has increased steadily since 1970s.

For the period 2002-03, 10 per cent of men and 16 per cent of women aged 18-69

were classified as sedentary. For men aged 20-70, 25.4 per cent had a body mass index (BMI) of over 25 while 35.8 per cent of women aged 20-70 also had a BMI of over 25.

A review for 2002 established that the prevalence of pre-school obesity was about 1 per cent, but stunting remained a problem in over half of all children. Obesity is uncommon in India and varies with the socio-economic status, the problem being more in high-income households.

The average amount of available food energy rose between 1964 and 2004, from around 2,050 to 2,470 kcal/person a day. Of late there has been a large increase in the consumption of animal products, fats and sugars. The proportion of energy from fat has increased over the years while there has been a reduction in cereal (grains) consumption.

The study was supported by 200 scientists conducting an extensive review of evidence from over 7,000 studies over five years between 2003 and 2007. Dr. K. Srinath Reddy, president of the Public Health Foundation of India, was among the 21 panellists.

• "Indians must enhance their physical activity"

• Excess body weight increases risk of some cancers

Fighting TB "is the responsibility of every citizen": Marcos Espinal

Marcos Espinal, Executive Secretary of the World Health Organisation-administered STOP TB Partnership, on the emerging threat of drug resistant tuberculosis, TB-HIV, and the bottlenecks in treatment. Excerpts from an interview conducted at the close of the World Conference on Lung Health in Cape Town:

Sarah Hiddleston

Tuberculosis was thought to be under control - what changed?

What has changed is the visibility of TB [tuberculosis] in the international community. It has never been controlled properly. Only in some industrialised countries. Five years ago we launched the Stop TB partnership to change the mentality that TB was a medical problem. TB is not a medical problem. TB is a social, political and human rights problem. It's a disgrace that TB has not been controlled for decades. We still have 9 million new cases and 1.6 million deaths every year.

What about the emergence of drug resistant TB?

Multi Drug Resistance is one of the threats to TB control, to DOTS [directly observed treatment, short course], so is TB-HIV. But TB is an independent pandemic. Ninety per cent of TB cases can be cured easily. Only 3-4 per cent of global cases are estimated to have drug resistant TB - about 400,000 cases each year. Those cases cannot be treated like normal TB. Current drugs are not very effective for MDR TB and for XDR [extreme drug resistant] TB there is nothing, basically. So the only way to prevent MDR XDR TB is by implementing the Stop TB strategy, mainly DOTS.

The other mistake of the international community was that five to six years ago we were not advocating for new tools, engaging the private sector, pharma. Now, we have new drugs, vaccines and diagnostics in the pipeline.

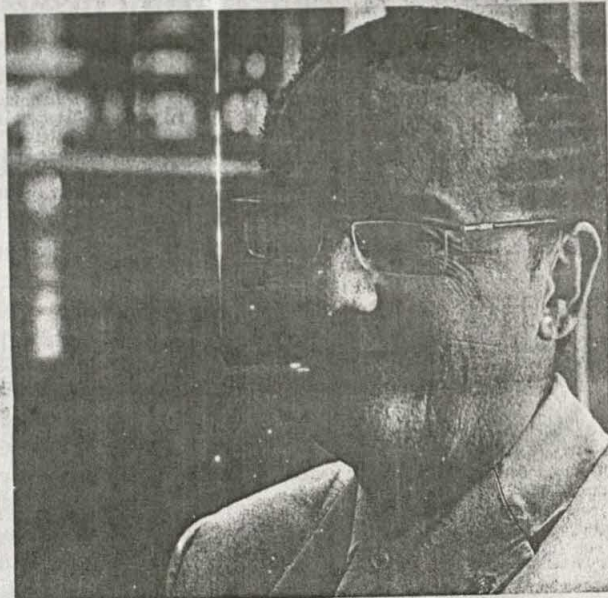
Seven years ago the mentality was that TB is only the responsibility of the government. No. TB is the responsibility of every citizen. Stop TB has 500 partners, a global plan that costs \$56 billion dollars [for 10 years]. We hope by the end of the decade we will have new tools. But TB is a slow incidence decline disease. It's not going to go away immediately...

Do you have the funds for the networks you have, the diagnostic and vaccine development...

There is a gap in the global fund. This plan should be funded by endemic countries for their own backyard and by donor countries. Endemic countries could do more. Donor countries could do more. For new tools the Bill and Melinda Gates Foundation is very committed but we need others to step up.

How important is an integrated approach to HIV and TB?

TB and HIV are married in sub-Saharan Africa and in South-East Asia it is



Dr. Marcos Espinal: "India is scaling up, but the government needs to solve the key issues of upgrading labs, training human resources and having good procurement systems." PHOTO: SARAH HIDDLESTON

growing. There is no doubt that TB is the number one cause of mortality among people living with HIV/AIDS. There are actions that can be done now. AIDS programmes can work with TB programmes to reduce the burden of TB among people living with HIV and vice versa. Access to antiretrovirals should be scaled up. It is a disgrace that for so long antiretrovirals were available and now we are seeing them slowly rolled out in Africa.

And in India?

The HIV epidemic is growing in India. So this is the time to do the prevention, to start scaling up testing for HIV among TB patients, to be more open about the fact that the two diseases are working together secretly and slowly.

Asia is more complex because of the population growth. Africa has the highest per capita rates of TB but the highest absolute numbers are in Asia. Sixty-four per cent of the TB cases come from Asia. There is a potentially explosive problem in Asia if TB-HIV and drug resistant TB are not addressed.

India is one of the top three high burden countries and population growth is huge. The TB programme is one of the best. But more than the national TB programme, it's a problem of society. It's a problem of making sure everyone in India is aware of TB. And I don't think we

are there yet.

If you look at India many of the TB cases go to the private sector. They [the government] are trying to roll out engagement of private providers, it's not easy because it's such a huge country. While the authorities are doing their best, which I recognise, it's more than that. The concept is engaging society at all levels. At the end of the day that will help the government.

India is lagging behind in terms of DOTS plus implementation for MDR. Although there are no confirmed reports of XDR there are cases that have been highlighted by doctors in Delhi, Lucknow, Mumbai...

I understand that the government is working with the green light committee. But that's the challenge - to scale up. The Indian government has expressed their commitment but I agree with you that they are a little bit behind. If they don't act quickly they might see an explosive situation.

It's a catch 22 question because if you ask "What do we do to sustain high quality DOTS or tackle MDR?" then obviously you should sustain high quality DOTS in a middle income country that has limited resources because of the vast population. You have to shut down the generator of the problem. If you don't do

that you will always have MDR no matter how much you cure MDR cases.

How important is the community in shutting off the tap and keeping patients adhering to treatment?

TB can be cured by participation of the community, faith-based organisations, sport clubs, the private sector. We need to make sure we educate people and convince the community to participate. Health systems are weak, infrastructure is not available widely, there are areas in India and Africa where people have to walk a long way to get to the health services. Convincing the community leaders the tribes, the society, community is the most important.

We've heard about people in South Africa who continually don't adhere to treatment, develop MDR or XDR TB and then mix very widely in their communities. If that happens in densely populated places in India...

Explosive!

So what do you do about the tension between human freedom to choose whether or not to take treatment and protecting public health. How do you weigh the balance?

In some countries they are putting people behind bars. It's up to every country. The responsibility of the government is to provide good public health services to the people. They will have to put things in context and decide if they want to enforce treatment or not. It's a very difficult situation. The best solution is to talk to the patients, to educate them, to convince them that they can be cured and have a productive life after TB.

We've heard many predictions of disaster during the conference here in Cape Town. Are you confident that it can be avoided?

The number one tool to prevent disaster is high quality DOTS. India is not doing bad within the limitations. It has a huge problem of TB, but there is political will. There are constraints - the absorption capacity, the health system, human resources. Not everyone can manage MDR TB.

There is also the bottleneck of improving and enhancing the capacity of laboratories. We have to improve time for diagnosis but also build the capacity, the human resources. Laboratories are not very widely available. This is what improving the health system is about. India is scaling up, but the government needs to solve the key issues of upgrading labs, training human resources and having good procurement systems.



Junk food topped with healthy vegetables

Aside from their nutritive contributions to the diet, the antioxidant vitamins E and C and the trace mineral selenium, have been reported to inhibit carcinogenesis and protect against CVD. The potent antioxidant effects of lipophilic vitamin E that remain in the phospholipid layers of cell membranes help protect PUFA from free radical attack, and also prevent oxidation of LDL, ultimately protecting against CVD. Vitamin E has also been reported to reduce the risk of cancers of the breast, GI tract, esophagus, mouth and pharynx.

Ascorbic acid is an aqueous antioxidant, which scavenges water-soluble superoxides and hydroxyl radicals. Vitamin C has also been reported to function as a chain-breaking antioxidant in lipid peroxidation. These antioxidative mechanisms have associated the compound with reduced risk for CVD and cancer. Vitamin C has also been reported to reduce the risk of cataracts by reducing the level of oxidized proteins in the lens. In the presence of selenium, vitamin C has been reported to hinder the effectiveness of the mineral against colon cancer. Selenium is a cofactor for the Phase-II enzyme glutathione peroxidase. This element has strong antioxidative property and plays a role in preventing carcinogenesis as well as lowering risk of CVD.

Polyphenols

Phenolic compounds are plant secondary metabolites, with a large variety in their structure. Phenols occurring in nature are of interest for many reasons – antioxidants, astringents, bitterness, browning reactions, colour, oxidation substrates, etc. They include simple phenols,

hydroxycinnamates, flavonoids, tocopherols, etc. Phenols are responsible for majority of the oxygen utilizing capacity in most plant-derived products. With the exception of carotene, the antioxidants in foods are phenolic compounds.

Phenolic compounds have wide range of biological properties. Of particular note are their anti-platelet aggregation property, anti-inflammatory potential, antioxidant, anti-tumoral and oestrogenic activity.

Flavonoids are polyphenolic compounds that include flavonols, flavones, isoflavones, anthocyanins and have been suggested to play a dominant role in the prevention of cancer and heart diseases. Over 4000 flavonoids have been identified, many of which occur in fruits, vegetables and beverages (tea, coffee, beer, wine and fruit drinks). Epidemiological data indicate that high fruit and vegetable consumption has health benefits in the prevention of chronic diseases including cardiovascular disease and certain types of cancer.

Other Phytochemicals

Indoles: Indoles are phytochemicals found in cruciferous vegetables (Brussels sprouts, kale, cabbage, broccoli, cauliflower, and spinach); e.g. Indole 3 carbinol. They have been reported to induce Phase-I and Phase-II hepatic enzymes. Possess chemopreventive activity especially for hormonal cancers such as breast cancer, through deactivation/detoxification of carcinogens.

Isothiocyanates: Like indoles, isothiocyanates are found in cruciferous vegetables (cabbage, brussels sprouts, turnips, radishes, broccoli and cauliflower); e.g. phenyl isothiocyanate, benzyl isothiocyanate. They are anticarcinogenic compounds and potent inhibitors of nitrosamine induced tumours, attributed to their inhibition of cytochrome P 450 enzymes. In addition, they are known to enhance certain Phase-II enzymes (such as UDP glucuronyl transferase) to detoxify carcinogens.

Allylic sulfur compounds: These are responsible for the typical odor of Allium vegetables garlic, onion, chives, shallots, and leeks. Allylic sulfur compounds which exhibit chemopreventive qualities and a decrease in CVD include: diallyl sulfide, diallyl disulfide, diallyl polysulfide, and S-allyl cysteine. These phytochemicals have been reported to prevent the formation of nitrosamines. (Synthesis of nitrosamines is directly inhibited by garlic, and nitrite has a greater affinity for SH-compounds than for amines; thus, allylic sulfur compounds competitively prevent the formation of nitrosamines). Garlic contains 60% diallyl disulfide, 14% diallyl sulfide, 6% allyl propyl sulfide. The reported chemopreventive mechanism of allylic sulfides is that they modulate Phase-I and Phase-II enzymes. Allylic sulfides prevent the metabolic activation of procarcinogens. These compounds also induce the carcinogen scavenger glutathione and glutathione-S-transferase.

Terpenes: Monoterpenes are major constituents of plant essential oils (citrus peel oil, dill oil, caraway oil, mint, etc); e.g. Limonene. In rodent studies, this compound inhibited a variety of cancers including cancer of the mammary glands, stomach, lung, skin and liver. D-limonene has been reported to induce Phase I and Phase II hepatic enzymes in rats. D-limonene has also been successfully used as a dissolving agent for gallstones in humans.

Phytic acid and saponins: Phytic acid present in legumes, oil seeds, and cereal bran is known to reduce blood glucose response to starchy foods. It is also known to lower blood cholesterol. It has cancer preventive influence. The negative influence of phytic acid has also been recognized. It interferes with the absorption of nutrients and micronutrients. Saponins are surface-active compounds found in legumes. These are recognized to beneficially lower blood cholesterol. However, the antinutritional attributes of saponins are: they lyse red blood cells (due to their interaction with cholesterol of RBC membranes), and also inhibit digestive enzymes and bind micronutrients such as zinc.

The history of human civilization is replete with different cultures identifying foods and other natural products that could correct disease states or maintain health.

Spices

Spices are consumed as food adjuncts to enhance sensory quality of foods. The primary function of spices in food like coriander, cumin, cinnamon, asafetida, clove, cardamom, garlic, onion etc, is to improve the organoleptic quality of our otherwise insipid food preparation. Besides enhancing the flavour and aroma of food, spices are recognized to possess several medicinal effects. They act as stimulus to the digestive system, relieve digestive disorders, and some spices have antiseptic value. Their attributes such as tonic, carminative, stomachic, diuretic, anti-spasmodic largely empirical nevertheless efficacious have earned them pharmacological applications in the indigenous system of medicine in India.

Several beneficial physiological effects of spices have now been experimentally documented which suggest that the use of these food adjuncts extend beyond taste and flavour. The components of spices responsible for the quality attributes have been designated as active principles, and in many instances they are also responsible for the health beneficial effects of spices.

Digestive stimulant action: The digestive stimulant action of spices is probably the most common. Spices like ginger, mint, ajowan and garlic are used as ingredients of pharmacological preparations for digestive disorders. Extensive animal studies have revealed that many spices (curcumin, capsaicin, ginger, fenugreek, mustard, cumin, coriander, ajowan, tamarind and onion) stimulate bile acid production by the liver and its secretion into bile. Bile acids play a major role in fat digestion and absorption. Several spices are also evidenced to stimulate the activity of digestive enzymes of pancreas, particularly lipase and terminal digestive enzymes of small intestinal mucosal upon continuous intake.

Medicinal Properties of Spices

Spice	Medicinal Properties
Turmeric (<i>Curcuma longa</i>)	Anti-inflammatory, diuretic, laxative, good for affections of the liver, jaundice, diseases of blood
Red pepper (<i>Capsicum annum</i>)	Anti-inflammatory, for pain relief (Rheumatism/neuralgia), useful in indigestion, rubefacient
Garlic (<i>Allium sativum</i>)	Anti-dyspeptic, anti-flatulent, for ear infection, duodenal ulcers, as rubefacient in skin diseases
Onion (<i>Allium cepa</i>)	Diuretic, emmenagogue, expectorant, for bleeding piles
Fenugreek (<i>Trigonella foenumgraecum</i>)	Diuretic, emmenagogue, emollient, useful in heart diseases
Cumin (<i>Cuminum cyminum</i>)	Antispasmodic, carminative, digestive stimulant
Coriander (<i>Coriandrum sativum</i>)	Anti-dyspeptic

Antidiabetic potential: Fenugreek, garlic and onion, and their sulfur compounds, turmeric and its colouring principle – curcumin – have been found to be effective in improving the glycemic status and glucose tolerance in diabetic animals/IDDM patients. The fibre rich fenugreek is believed to delay gastric emptying by direct interference with glucose absorption. The hypoglycaemic potency of garlic and onion is attributed to the disulfide compounds present in them, which cause direct or indirect stimulation of insulin secretion by the pancreas. In addition, they may also have insulin-sparing action by protecting from sulfhydryl inactivation. Nephropathy is a common complication in chronic diabetes. Capsaicin, the pungent principle of red chilies, has been shown to be useful in diabetic neuropathy.

Hypolipidemic influence: Fenugreek, garlic, onion, turmeric and red pepper are found to be effective as hypocholesterolemics under various conditions of experimentally induced hyper-cholesterolemia/hyperlipidemia. Further, fenugreek, onion and garlic are effective in humans with hyperlipidemic condition. In addition, garlic exhibits anti-thrombotic and hypertensive properties, which also contribute to cardiovascular protection besides the hypolipidemic properties.

Anti-lithogenic effect: Persistent lithogenic diet leads to cholesterol saturation in bile resulting in formation of cholesterol crystals, i.e., gallstones. Dietary curcumin and capsaicin cause a

significant reduction in the induction of gallstones in animals maintained on a lithogenic diet.

Antioxidant activity: Studies with several *in vitro* systems as well as *in vivo* animal studies have revealed that curcumin (turmeric), capsaicin (red pepper) and eugenol (cloves) have beneficial antioxidant property by quenching oxygen free radicals, by inhibiting the production of superoxide anion and hydroxyl radicals, and by enhancing the antioxidant enzyme activities.

Anti-inflammatory property: Turmeric extract, curcuminoids, and volatile oil of turmeric have been found to be effective as anti-inflammatory in several studies. Animal studies have revealed that curcumin and capsaicin lower the incidence and severity of arthritis and also delay the onset of adjuvant induced arthritis.

Antimutagenicity and anti-cancer effect: Turmeric/curcumin, garlic/its sulfur compounds have been shown to be antimutagenic in several experimental systems. Animal studies involving experimental induction of tumour of specific tissues have revealed significant reduction of the incidence of tumour in curcumin treatment. Cancer preventive ability of garlic has also been documented in etiological studies.

Healthy Bacteria

Often specific food components (Probiotics) are intentionally added to diet for desirable health benefits linked to proliferation of desirable gut



Various nuts and spices



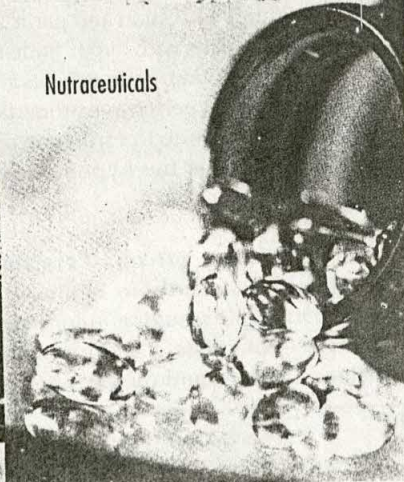
Cruciferous Vegetables



Probiotics



Spices



Nutraceuticals

bacteria, while preferably inhibiting or minimizing the growth of undesirable ones. Prebiotic compounds that have been used for specific growth enhancement of resident intestinal bifidobacteria include N-acetylglucosamine, galactosamine, liver extract, milk glycoproteins, lactoferrin, lactu-lose, lactitol, raffinose, stachyose, and galacto-oligosaccharides.

'Probiotics' are live microorganisms, which when administered to humans favourably influence the intestinal microflora, which is reflected in improvement of health. Lactic acid bacteria are regarded as probiotics, and are believed to have an ability to colonize the intestinal tract and perhaps exclude colonization by pathogenic microflora. The effects attributed to consumption of *Lactobacillus* consist of immune enhancement, preventing intestinal disorders and reducing viral diarrhea.

Several benefits emerge from bifidobacteria since they are produced from the fermentation of carbohydrates acetic and lactic acids that lower faecal pH. The increased acidity and colonization of bifidobacteria reduce the colony of other pathogenic bacteria producing toxic metabolites and detrimental enzymes. This leads to a number of beneficial consequences: prevention of constipation, deconjugation of bile salts, reduction of blood cholesterol, reduction of blood pressure, protection of liver function, induction of cell-mediated immunity, anti-tumorigenic activity, production of nutrients and vitamins, improvement of lactose tolerance, degradation of nitrosamines, absorption of calcium.

In short, there is an abundance of scientific evidence indicating that certain naturally occurring non-nutritive, and some nutritive, chemical substances of fruits, vegetables, grains, nuts, tea and seeds may prevent or reduce the risk of some chronic diseases, such as various cancers and cardiovascular diseases. The use of such nutraceuticals in food or consumption of such functional foods is the current strategy to optimize our daily nutrition.

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HYDERABAD

THE HINDU • FRIDAY, DECEMBER 21, 2007

Global Fund renews grant to India

Grant to fight AIDS, TB and malaria

Special Correspondent

NEW DELHI: The Global Fund to Fight AIDS, Tuberculosis and Malaria has renewed its grant to India, worth more than \$100 million for the next three years. This agreement was signed here on Thursday by Michel Kazatchkine, Fund executive director, and Prashant, director in the Department of Economic Affairs.

The grant brings the total approved amount of Fund resources for India to \$492 million. The total amount approved by the Fund Board to be granted to India is \$747 million, of which \$160 million has already been disbursed.

The grant will be used to strengthen and upscale antiretroviral (ARV) treatment programmes and to increase access to quality, voluntary counselling and testing services. Resources will also be used to remove the stigma associated with AIDS through efficient communication and to train more health professionals.

Talking to reporters here, Dr. Kazatchkine appreciated India's efforts at fighting the diseases but said there was no room for complacency. The focus had to be on awareness and universal access to drugs.

New distribution pattern

Under a new pattern of distribu-

- ARV treatment programmes to be strengthened

- India ideal place for promoting research: executive director

tion of funds, 40 per cent of the money would go to civil society and the remaining to the government to ensure that all stakeholders came together to fight the diseases. India, with its successful track record of healthcare workers and research, was an ideal place for promoting research, he said.

During his first official visit to India, Dr. Kazatchkine met representatives of the private sector to engage them in public-private partnership resource mobilisation and providing better healthcare to the workforce. "Several brand names like Armani, GAP and American Express have agreed to contribute part of their profits to the Global Fund to make them partners in this endeavour."

Union Health Minister Anbumani Ramadoss said the resources would be put to the best use, building on the strong performance of the programme during its first two years.

Grapes may prevent colon cancer

Washington, Nov 15: A diet that contains grapes may prevent colon cancer -- the third most common form of cancer that kills more than a half a million people worldwide each year, suggests a new study by researchers in the US.

Researchers at the University of California in Irvine followed up on previous studies that had shown resveratrol, a nutritional supplement derived from grape extract, blocks the Wnt pathway - a network of proteins linked to more than 85 percent of spo-

radic colon cancers. In the latest study done on all colon cancer patients, the researchers gave one group 20 mg daily of resveratrol as a pill and told another group to drink 120 grams daily of grape powder mixed in water. A third group was asked to drink 80 grams daily of grape powder mixed in water.

While the supplements did not have an impact on existing tumours, the study showed that Wnt signalling in the patients taking 80 grams of grape powder was sig-

nificantly reduced, the scientists said on the university's website.

Similar changes were not seen in patients taking the higher dose of grape powder or the resveratrol pills. The researchers aren't certain why the lower dose of grape powder was more effective than the higher one.

However, the scientists believe that the active components in the grapes may have different effects at lower dosage than they do at a higher dosage, which is a fairly common finding in nutritional studies. IANS

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HONEY : NATURE'S GIFT

Dr. V.Indira



Honey is a sweet viscous liquid produced by the honey bees mainly from the nectar of plants. Honey bees are amazing social insects. There are four important species of honey bees found in India, viz., *Apis dorsata* (Rock bee), *Apis florea* (Little bee), *Trigona irridipennis* (Stingless bee), *Apis cerana indica* (Indian bee) and *Apis mellifera* (European honey bee).

Honeybees can be kept almost anywhere where there are flowering plants that produce nectar pollen. Choose a site for beehives that is discrete, sheltered from winds and partially shaded. Avoid keeping bees near open drainages. Two types of hives are used to keep bees, Newton's hive for Indian bees and Langstroth's hive for keeping European bees.

Royal jelly, secreted by glands of nurse bees, is a very nutritious food. It contains 15 to 18% proteins, 2 to 6% lipids, 9 to 18% carbohydrates and 0.7 to 1.2% ash. Eight essential amino acids for human beings are present in royal jelly. It increases vigour and vitality in human beings.

Honey is sold as 'extracted honey' bottled, liquid honey that has been extracted from the combs; 'comb honey' honey still in its natural comb and 'chunk honey' a bottled combination of extracted and comb.

Chemical composition of honey is very complex. It mainly contains sugars but acids, minerals,

vitamins, enzymes and antibiotic substances are also present in small amounts. The solids in honey with the floral source.

Health benefits

- Honey is a rich energy giving food and with milk forms a perfect food.
- It is highly appreciated as food for infants, the aged and individual persons.
- It helps to build up hemoglobin in blood.
- As it provides energy in a readily available form, athletes consume honey after or before hard exercise or long races.
- Honey is used as a carrier in all Ayurveda medicines.
- It is a good laxative, a blood purifier, preventive against cough and cold and relieves of sore throat.
- It is a remedy for tongue ulcers.
- A spoonful of honey at bed time is good for insomnia.
- Honey is also used for curing burns and wounds.
- Honey-lemon juice drink is known to reduce obesity.

— Sri Parasakthi College for Women,
Courtallam

Chennai Tops Green Building Index

Chennai has the most Green Buildings in the country. Fifteen projects have been listed as Green while four have been rated as Gold, a step lower than the topmost rating of Platinum, and one has been rated Silver by the Indian Green-Building Council (IGBC).

The IGBC rates buildings as 'Green' on the criteria of energy saving construction, natural lighting or energy-efficient lighting, water treatment plant, sewage treatment plant so that there is zero water discharge, use of non-toxic paint, recycled tiles, wood from certified forests or recycled wood, use of fly-ash bricks and fly-ash cement, and high-efficient air-conditioning. It should also be designed to prevent heat from outside entering the building.

The numbers of buildings listed and assessed have been less in other cities, especially, Mumbai and Delhi. Seventeen Chennai companies have also been enlisted in IGBC which showed the tremendous response for the concept in the city, said C.N.Raghavendran, Chairman, Chennai Chapter, IGBC.

According to him, there are only 80 Green Buildings in India and Chennai leads the pack. "We expect this to increase to a 1000 in three years. He said.

— The NI Express.

October'07

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 **KISAN**
WORLD

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India's Disturbing Health Card

ASHISH BOSE

The National Family Health Survey-3 data shows disturbing trends for children and women in the reproductive age, especially in the "sick" states of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh. Significantly, Himachal Pradesh is progressive on several indicators and comparable to Kerala, while West Bengal is showing signs of joining the ailing states.

It is not possible to do justice to the 389 tables in the 540-page final report of the National Family Health Survey (NFHS-3) 2005-06 (released in October 2007, in this brief article. We shall present some revealing and disturbing facts on the health of women in the reproductive age group and also on children culled from the tables. We have reformatting the tables to make them reader-friendly.

Child Marriage

Women in the age group 18-29 years were asked about their age at marriage. In spite of the Child Marriage Restraint Act, 1929 which prohibits marriage of girls below 18 years, the majority (53.4 per cent) of rural women (in the age group 18-29 years) in India were married before they turned 18. In the following states, the percentages are much higher than the national level: Jharkhand 70 per cent, Bihar 69 per cent, Rajasthan 67 per cent, Andhra Pradesh 63 per cent, West Bengal 62 per cent, Madhya Pradesh 60 per cent and Uttar Pradesh 59 per cent. It is not surprising that in what we call the BIMARU (the demographically sick states of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh) states, the figures are high. What is surprising is that in rural Andhra Pradesh and West Bengal, the figures are so high.

In contrast, the comparable figure for rural Kerala is 20 per cent and surprisingly, in Himachal Pradesh, only 14 per cent. In Manipur it is 16 per cent and in Jammu and Kashmir 19 per cent. As we shall see later, Himachal Pradesh is turning out to be a progressive state which can overtake the much publicised state of Kerala in regard to several demographic indicators. Turning to urban areas, we find that the overall figure for women married before they turned 18 is 30 per cent, compared to 38 per cent in Bihar, 36 per cent in Rajasthan, 33 per cent in Jharkhand, 32 per cent in Uttar Pradesh and 31 per cent in West Bengal. In urban Andhra

Pradesh, it is 43 per cent. Thus Andhra Pradesh has a bad record of child marriages of girls: 63 per cent in rural areas and 43 per cent in urban areas (both figures are higher than the national average).

In contrast, in the urban areas of Jammu and Kashmir, only 9 per cent of the girls were married before they turned 18, in Kerala 12 per cent, in Himachal Pradesh 14 per cent and in Uttaranchal 17 per cent. It seems that in the hilly states of Jammu and Kashmir, Himachal Pradesh and Uttaranchal, urban girls are not married off early though coastal Kerala has the best record.

Teenage Pregnancy

Data were collected from women in the age group 15-19 years who have had a live birth, are pregnant with their first child and those who had begun childbearing. In India as a whole, teenage pregnancies were as follows:

Teenage Pregnancies, 2005-06 (in %)

	Rural	Urban
Have had a live birth	14.5	6.3
Pregnant with first child	4.6	2.4
Have begun childbearing	19.1	8.7

Thus a sizeable proportion of India's teenagers are involved in reproductive activity, with sharp rural-urban differences. Unfortunately, the relevant table in the NFHS report does not give rural-urban breakdown by state (perhaps available in the data files but not available in this report) but the statewise tables reveal the following: in Jharkhand 21 per cent of the teenagers have had a live birth, in Bihar 19 per cent, in West Bengal 19 per cent, in Rajasthan 13 per cent, in Assam 13 per cent, in Andhra Pradesh 13 per cent and in Karnataka 13 per cent, compared to the all-India figure of 12 per cent (combined figure for rural and urban). In contrast, the figures are low in some states: 5 per cent in Tamil Nadu, 4 per cent in Uttaranchal, 4 per cent in Punjab, 3 per cent in Kerala, 3 per cent in Jammu and Kashmir, and 2 per cent in Himachal Pradesh.

In the category of "currently pregnant" teenage women, we find that the highest figures are in Jharkhand 7 per cent, West Bengal 6 per cent, Bihar 6 per cent, Haryana 5 per cent and Andhra Pradesh 5 per cent, as compared to the all-India figure of

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Table 1: Early Childhood Mortality Rates (Deaths per 1000 children in age group)

Rank States	Infant Mortality	Neonatal Mortality (NN)	Post-neonatal Mortality (PNN)	Under-Five Mortality	% of Children Who Had All Basic Vaccinations	% of Children Who Had No Vaccinations
India	57	39	18	74	44	5
1 Uttar Pradesh	73	48	25	96	23	3
2 Chhattisgarh	71	51	20	90	49	3
3 Madhya Pradesh	70	45	25	94	40	5
4 Jharkhand	69	49	20	93	34	4
5 Assam	66	46	21	85	31	15
6 Rajasthan	65	44	21	85	27	6
7 Orissa	65	45	19	91	52	12
8 Bihar	62	40	22	85	33	7
9 Arunachal Pradesh	61	34	27	88	28	24
10 Andhra Pradesh	54	40	13	63	46	4
11 Tripura	52	33	18	59	50	15
12 Gujarat	50	34	16	61	45	5
13 West Bengal	48	38	10	60	64	6
14 Jammu and Kashmir	45	30	15	51	67	5
15 Meghalaya	45	24	21	71	33	17
16 Karnataka	43	29	14	55	55	7
17 Uttaranchal	42	28	14	57	60	9
18 Haryana	42	24	18	52	65	8
19 Punjab	42	28	14	52	60	7
20 Delhi	40	29	11	47	63	9
21 Nagaland	38	20	19	65	21	18
22 Maharashtra	38	32	6	47	59	3
23 Himachal Pradesh	36	27	9	42	74	2
24 Mizoram	34	16	18	53	47	7
25 Sikkim	34	19	14	40	70	3
26 Tamil Nadu	30	19	11	36	81	0
27 Manipur	30	19	11	42	47	7
28 Goa	15	9	7	20	79	0
29 Kerala	15	12	4	16	75	2

(1) The states are in descending order of IMR. (2) Neonatal mortality. The probability of dying in the first month of life. (3) Post-neonatal mortality. The probability of dying after the first month of life but before the first birthday. (4) Infant mortality. The probability of dying before the first birthday. (5) Child mortality. The probability of dying between the first and fifth birthdays. (6) Under-five mortality. The probability of dying before the fifth birthday.

Table 2: Percentage of Women (15-49) with Anaemia (Haemoglobin in g/dl = grams per decilitre)

States	Any Anaemia (<11.0 g/dl)	Mild (10.0-10.9 g/dl)	Moderate (7.0-9.9 g/dl)	Severe (>7.0 g/dl)
India	55.3	38.6	15	1.8
1 Jharkhand	69.5	49.6	18.6	1.3
2 Assam	69.5	44.8	21.2	3.4
3 Bihar	67.4	50.5	15.9	1
4 Tripura	65.1	49	14.8	1.3
5 West Bengal	63.2	45.8	16.4	1
6 Andhra Pradesh	62.9	39	20.6	3.3
7 Orissa	61.2	44.9	14.9	1.5
8 Sikkim	60	42.1	16.2	1.7
9 Chhattisgarh	57.5	39.9	15.7	1.9
10 Haryana	56.1	37.6	16.7	1.7
11 Madhya Pradesh	56	40.8	14.1	1
12 Gujarat	55.3	36.2	16.5	2.6
13 Uttaranchal	55.2	40.4	13.3	1.5
14 Tamil Nadu	53.2	37.4	13.6	2.2
15 Rajasthan	53.1	35.2	15.4	2.5
16 Jammu and Kashmir	52.1	37.3	13.1	1.6
17 Karnataka	51.5	34.4	15.1	2
18 Arunachal Pradesh	50.6	36.6	12.5	1.6
19 Uttar Pradesh	49.9	35.1	13.2	1.6
20 Maharashtra	48.4	32.8	13.9	1.7
21 Meghalaya	47.2	32.8	12.6	1.8
22 Delhi	44.3	35.2	8.8	0.2
23 Himachal Pradesh	43.3	31.6	10.5	1.2
24 Mizoram	38.6	29.1	8.8	0.7
25 Goa	38	29.6	7.8	0.6
26 Punjab	38	26.2	10.4	1.4
27 Manipur	35.7	30.1	5.1	0.5
28 Kerala	32.8	25.8	6.5	0.5

(1) The states are in descending order of "any anaemia" and exclude Nagaland.

(2) Prevalence of anaemia, based on haemoglobin levels, is adjusted for altitude using formula in CDC (1998).

4 per cent. The figures are somewhat lower in Kerala 3 per cent, Tamil Nadu 3 per cent, Uttar Pradesh 3 per cent, Madhya Pradesh 3 per cent, Rajasthan 3 per cent and Uttaranchal 3 per cent. The lowest figures are in Jammu and Kashmir 0.8 per cent and Himachal Pradesh 0.9 per cent.

For teenage women who have begun childbearing, the all-India figure is 16 per cent. The

highest figures are: Jharkhand 28 per cent, Bihar 25 per cent and West Bengal 25 per cent. The lowest figures are: Himachal Pradesh 3 per cent, Jammu and Kashmir 4 per cent, Uttaranchal 6 per cent, Punjab 6 per cent and Kerala 6 per cent. It is worth noting that Bihar and West Bengal are in the same category, at least in regard to teenage pregnancy.

Early Childhood Mortality Rates

NFHS-3 collected detailed data on children (12-23 months) and different types of child mortality: infant mortality rate (IMR), neonatal, post-neonatal, child and under five (see notes to Table 1). Table 1 gives the details for 29 states (including Delhi national capital territory) but excluding union territories (UTs).

It will be seen that the IMR ranges from the high levels in Uttar Pradesh 73,

Table 3: Prevalence of Anaemia in Children 6-59 Months (in %)

Rank States	Anaemia Status by Haemoglobin Level			
	Any Anaemia (<11.0 g/dl)	Mild (10.0-10.9 g/dl)	Moderate (7.0-9.9 g/dl)	Severe (>7.0 g/dl)
India	69.5	26.3	40.2	2.9
1 Bihar	78.0	29.6	46.8	1.6
2 Madhya Pradesh	74.1	27.1	43.6	3.4
3 Uttar Pradesh	73.9	25.4	45.0	3.6
4 Haryana	72.3	25.8	42.2	4.3
5 Chhattisgarh	71.2	24.0	45.2	2.0
6 Andhra Pradesh	70.8	23.7	43.5	3.6
7 Karnataka	70.4	28.6	38.6	3.2
8 Jharkhand	70.3	29.3	39.1	1.9
9 Rajasthan	69.7	22.8	40.2	6.7
10 Gujarat	69.7	25.0	41.1	3.6
11 Assam	69.6	28.7	38.7	2.2
12 Punjab	66.4	21.7	38.1	6.6
13 Orissa	65.0	28.9	34.5	1.6
14 Meghalaya	64.4	31.7	31.7	1.0
15 Tamil Nadu	64.2	27.1	34.6	2.6
16 Maharashtra	63.4	21.9	39.6	1.8
17 Tripura	62.9	27.5	34.6	0.7
18 Uttaranchal	61.4	28.5	30.6	2.3
19 West Bengal	61.0	30.0	29.4	1.5
20 Sikkim	59.2	28.9	29.5	0.8
21 Jammu and Kashmir	58.6	25.8	30.4	2.4
22 Delhi	57.0	26.3	30.0	0.7
23 Arunachal Pradesh	56.9	27.1	29.1	0.8
24 Himachal Pradesh	54.7	25.7	26.8	2.2
25 Kerala	44.5	23.5	20.5	0.5
26 Mizoram	44.2	23.5	20.2	0.6
27 Manipur	41.1	25.6	15.2	0.3
28 Goa	38.2	19.5	17.1	1.5

(1) The states are arranged in descending order of "any anaemia".

(2) This is based on children who stayed in the household the night before the interview. Prevalence of anaemia, based on haemoglobin levels, is adjusted for altitude using formula in CDC (1998). Haemoglobin in g/dl = grams per decilitre. Excludes Nagaland.

Table 3a: Trends in Children's Anaemia (in %)

Anaemia Status by Haemoglobin Level	NFHS-3 (2005-06)			NFHS-2 (1998-99)		
	Rural	Urban	Total	Rural	Urban	Total
Any anaemia (<11.0 g/dl)	80.9	72.2	78.9	75.3	70.8	74.3
Mild (10.0-10.9 g/dl)	25.7	25.8	25.7	22.7	23.7	22.9
Moderate (7.0-9.9 g/dl)	51.7	42.0	49.4	47.1	42.0	45.9
Severe (7.0 g/dl)	3.5	4.4	3.7	5.5	5.1	5.4

(1) This table includes only the last two children of 6-35 months of ever-married women who were interviewed.

(2) Prevalence of anaemia, based on haemoglobin levels, is adjusted for altitude using formula in CDC (1998).

(3) Haemoglobin in g/dl = grams per decilitre. NFHS-3 estimates of anaemia. Excludes Nagaland.

Table 4: Education, Exposure to TV, Use of Contraception by Women and TFR

States	Education (%)				Watch TV (%)		Use of Contraception by Women (%)		TFR (per Woman)	
	No Education (%)		12 or More Years Complete		W	M	Rural	Urban	Rural	Urban
	W	M	W	M						
India	40.6	18.0	12.0	19.7	55.0	63.2	45.3	55.8	3.0	2.1
Bihar	62.1	27.7	4.9	20.8	23.1	33.4	26.8	41.3	4.2	2.9
Rajasthan	61.1	24.3	7.3	15.7	40.4	55.0	38.0	62.0	3.6	2.2
Jharkhand	58.5	27.1	7.8	17.0	31.8	36.8	25.2	49.9	3.7	2.3
Uttar Pradesh	53.5	21.4	10.7	19.8	40.1	50.1	25.3	42.4	4.1	3.0
Madhya Pradesh	50.1	22.9	8.8	18.1	43.0	49.8	51.5	56.3	3.3	2.6
Chhattisgarh	49.9	21.0	7.4	15.4	44.8	55.6	46.4	58.9	2.9	1.8
Andhra Pradesh	45.4	23.2	8.8	18.4	74.3	78.4	67.0	67.2	1.8	1.7
Arunachal Pradesh	41.9	22.4	9.6	14.8	54.5	56.7	36.4	39.4	3.2	2.5
Jammu and Kashmir	41.0	15.3	14.2	19.3	64.5	62.6	40.4	55.8	2.7	1.6
Orissa	40.3	21.6	8.0	16.4	52.1	60.8	43.6	50.1	2.5	1.9
Haryana	37.6	14.4	14.3	20.0	62.1	63.1	57.7	59.7	2.9	2.2
West Bengal	36.3	22.9	8.6	16.0	51.6	56.9	49.9	49.9	2.5	1.6
Karnataka	33.6	17.2	13.5	21.1	69.5	80.4	64.7	59.2	2.2	1.9
Uttaranchal	32.6	11.6	22.0	29.9	66.3	70.4	54.2	59.2	2.7	2.2
Gujarat	32.4	13.2	13.2	17.3	62.0	69.5	55.5	57.7	2.8	1.9
Assam	30.2	14.4	10.2	15.3	44.4	56.6	24.8	37.2	2.7	1.4
Meghalaya	29.5	24.4	13.4	14.0	49.3	56.4	13.0	36.7	4.4	2.3
Punjab	28.5	14.0	19.1	17.2	80.4	84.8	58.6	51.8	2.1	1.9
Sikkim	26.7	11.5	12.5	18.2	67.0	66.0	48.0	51.7	2.2	1.3
Maharashtra	23.5	7.3	16.4	24.1	69.4	76.3	65.8	64.0	2.3	1.9
Tripura	22.4	11.1	6.7	11.7	67.2	73.3	45.0	44.4	2.3	1.7
Manipur	21.8	5.6	20.9	31.5	71.6	73.2	23.0	24.8	3.1	2.4
Tamil Nadu	21.7	9.3	19.2	23.2	81.4	83.9	60.7	59.2	1.9	1.7
Nagaland	21.7	15.3	10.9	16.3	53.3	61.9	18.8	31.8	4.2	2.7
Delhi	21.4	9.6	37.2	38.0	89.5	87.8	55.9	56.5	2.5	2.1
Himachal Pradesh	18.5	5.3	21.4	30.1	72.4	79.9	71.0	71.2	2.0	1.6
Goa	12.7	6.0	28.1	25.1	87.3	85.9	35.2	38.6	1.8	1.8
Mizoram	5.6	5.5	14.3	16.0	79.1	83.3	54.6	64.0	3.3	2.5
Kerala	3.9	1.3	25.7	24.8	73.0	80.7	57.6	58.5	2.0	1.7

(1) The data for women relate to the reproductive age group (15-49 years).

(2) The states are arranged in order of women (15-49) with no education.

Chhattisgarh 71 and Madhya Pradesh 70, to low levels in Kerala 15 and Goa 15. Andhra Pradesh has a fairly high IMR of 54 per 1,000 live births compared to Himachal Pradesh's 36.

Sadly, Uttar Pradesh, the most populous state in India, has the highest infant mortality rate. It is shocking to note that in spite of the much trumpeted immunisation programme of the government, in India as a whole, only 43.5 per cent of the children had all basic vaccinations. The figures vary from 23 per cent in Uttar Pradesh to 81 per cent in Tamil Nadu. It is also shocking to note that in Assam 15 per cent of the children had no immunisation at all while in Orissa, 12 per cent of the children had no immunisation at all. In the smaller states of Arunachal Pradesh, Tripura and Nagaland, the situation was worse in regard to immunisation.

Prevalence of Anaemia in Women (15-49 Years): One of the dismal findings of NFHS-3 is the high level of prevalence of anaemia (too few red blood cells in the bloodstream resulting in insufficient

oxygen to tissues and organs) among women in the reproductive age group. Table 2 (p 11) gives the details. It will be seen that in a majority of the states in India, women suffer from anaemia.

West Bengal does not fare well at all in regard to anaemia in women. In fact, it is comparable to the BIMARU states when one considers health indicators.

Prevalence of Anaemia in Children (6-59 Months): Table 3 (p 11) shows a very depressing picture. In India as a whole, 70 per cent of the children have some anaemia. It is surprising to note that even in the demographically progressive states like Andhra Pradesh, Karnataka and Tamil Nadu the prevalence rate is as high as in the states of Bihar, Jharkhand, Uttar Pradesh, Madhya Pradesh and Rajasthan.

A shocking revelation is that the prevalence of anaemia has increased from 74 per cent as per NFHS-2 (1998-99) to 79 per cent according to NFHS-3 (2005-06).

As the report points out: "The increase is seen primarily in rural areas where anaemia rose from 75 per cent to 81 per cent" (NFHS-3:290). As mentioned earlier

the NFHS-3 report does not give the rural-urban breakdown. The overall picture is shown in Tables 3 and 3a (p 11).

Educational Level, Exposure to tv, Use of Contraception and Fertility Level: Table 4 presents data on education of women (and men), tv viewing, use of contraception by women (any modern method) and total fertility rate (TFR). The TFR is a measure of fertility that summarises the rate of childbearing in a given period of time, often a year, and is derived by summing the age-specific birth rates for a population of women in a given period. This table also brings out the relationship between education, exposure to tv, use of contraception and fertility level without doing elaborate statistical exercises. For example, Bihar which has the highest rural TFR (4.2) (barring Meghalaya where it is 4.4), only 27 per cent of the rural women practise contraception, only 23 per cent of women watch tv (compared to 80 per cent in rural Punjab), and only 5 per cent of the rural women completed 12 or more years of education.

Conclusions

It may be noticed that in Kerala, Goa and Punjab, the percentage of women with 12 or more years of education is higher than that of males. It is interesting to note that in Jammu and Kashmir, Delhi and Sikkim,

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women watch TV more than men. It is worth noting that Himachal Pradesh has the highest use of contraception both in rural and urban areas (71 per cent).

Finally, we note that the TFR in rural areas is the lowest in Andhra Pradesh 1.8, Goa 1.8, Tamil Nadu 1.9 and Kerala 2.0. The highest rural TFR is in Meghalaya 4.4, Bihar 4.2, Nagaland 4.2 and Uttar Pradesh 4.1. The urban TFR is lowest in Sikkim 1.3, Assam 1.4, Jammu and Kashmir 1.6 and West Bengal 1.6. The highest urban TFR is in Uttar Pradesh 3.0, Bihar 2.9 and Madhya Pradesh 2.6, excluding the smaller states.

The report of NFHS-3 has massive data on fertility, family planning, infant and child mortality, maternal health, child health, nutrition, anaemia, HIV

prevalence, morbidity, healthcare, women's empowerment, domestic violence and so on. We have highlighted only some significant findings of the survey. There is enough scope for taking up detailed studies to fully utilise the data.

This should include evaluation of the quality of data also. For example, we do not think that NFHS type of survey can collect reliable data on domestic violence which is a favourite topic of some western lobbies.

To sum up, my thesis (first propounded in 1985 to brief the then prime minister) that to understand India's population problem, one must focus on the BIMARU states is relevant even in 2005-06 according to the NFHS-3 data. Taking both population size and area into consideration,

there is no doubt that these four states are indeed the most vulnerable states in India. Of course there are smaller states like Orissa, Assam and the north-eastern states which are equally vulnerable. The National Rural Health Mission has rightly included all these states in the list of "high focus" states (earlier called empowered action group states). NRHM also includes the hilly states of Jammu and Kashmir and Himachal Pradesh in the high focus states. Our analysis, however, shows that Himachal Pradesh is a demographically progressive state, comparable with Kerala. On the other hand, West Bengal, especially rural West Bengal is emerging as a BIMARU state. There are however many imponderables which only detailed analyses will clarify.

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Leadership required to solve nutrition problems'

International conference held at NIN

H 16-11-07

Special Correspondent

HYDERABAD: Leadership, communication and advocacy skills are required more than knowledge to address the major food and nutrition problems facing India, said Ricardo Uauy, president, International Union of Nutritional Sciences, here on Thursday.

He was delivering the 31st Gopalan Oration-2007 on 'Leadership more than new knowledge is required to improve nutrition in India' as part of the three-day 39th conference of Nutrition Society of India at the National Institute of Nutrition (NIN).

Dr. Uauy of Chile observed that leadership skills should enable young scientists to better discharge their functions. They could be effective investigators, professors, programme adminis-

trators, policy-makers, communicators and advocates for the nutrition improvement. Kamala Krishnaswamy, president of the society, chaired the session.

C. Gopalan, founder-president of the society, who could not attend because of indisposition, in a prepared speech read out by B. Sesikiran, NIN Director, suggested strengthening of the country's nutrition infrastructure.

He said this could be strengthened by setting up a 'national centre for the comprehensive analysis of foods', a 'national nutrition and family health monitoring bureau' and a 'national centre for promotion and dissemination of nutrition education'. The two centres could be put up at NIN. Several experts from within the country and abroad are attending the conference.

National Filaria Day

15 November



Dr. Anbumani Ramadoss
Union Minister for Health
& Family Welfare



Smt. Panabaka Lakshmi
Union Minister of State for Health
& Family Welfare

FILARIASIS IS DREADFUL BUT PREVENTABLE ...



If you are living in filariasis affected area, the infection may be in your blood, even if you are healthy

CONSUME ONLY ONE DOSE OF DEC TABLETS ONCE A YEAR ON 15th NOVEMBER - NATIONAL FILARIA DAY FOR AT LEAST FIVE YEARS

- Health workers will distribute DEC Tablets in Filariasis affected areas through house to house visits.
- DEC Tablets can also be taken from any health centre in your locality.
- DEC Tablets must be swallowed immediately in front of the Drug Distributor.
- Recommended doses of DEC tablet (100mg) :
 - For 2 to 5 years - One Tablet
 - For 6 to 14 years - Two Tablets
 - For 15 years and above - Three Tablets
- Children below two years, pregnant women and seriously ill persons should not take DEC tablets
- People having filariasis infection in their blood may experience side reactions like light fever, body ache, headache, nausea, vomiting, etc. These are temporary and will subside within one or two days. If the problem persists, immediately consult a Health Worker / Health Centre
- Filariasis is transmitted by mosquitoes. Do not allow water stagnation in around your house. Keep your environment clean

OUR RESOLVE : FREEDOM FROM FILARIASIS



National Vector Borne Disease Control Programme
Directorate General of Health Services
Ministry of Health & Family Welfare, Govt of India



PROMOTING THE HEALTH STATUS OF WOMEN WITH SENSORY DISABILITIES

C. Janakavalli, M. Sumathi

Abstract

Stating that every country should treat girls, boys, women and men with disabilities as members of their societies in order to enable them to exercise the same rights and obligations as other members, the authors list the standard rules that are formulated in this regard by the United Nations.

The health status of the women with sensory disabilities varies according to individual circumstances and the place in which they live. Access to communication and information, especially for those with hearing and visual impairments is very limited. Although the organizations working for the disabled women make effort to empower them, in practice, women with sensory disabilities have fewer opportunities to take part, to take action and to make change. Women with Disabilities are often denied healthcare both physically and psychologically. Hence, there is a need for women

with sensory disabilities to be made aware of the health needs in order to lead a healthy life as other non-disabled women.

The UN Standard Rules on the Equalization of Opportunities for Persons with Disabilities should be adopted in all member countries. Every country should treat the girls, boys, women and men with disabilities, as members of their societies, so that they may exercise the same rights and obligations as other members. The following are the Standard Rules pointed out by UN.

- All countries should ensure provision of effective medical

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care to girls and women with disabilities.

- In all countries, primary healthcare should cover the needs of disabled women at home or by providing access to health clinics and hospitals. The authorities in all countries should ensure that practitioners in primary care are also trained to recognize the onset of disabilities arising from mental health problems and to take the appropriate action. The age aspect should also be taken into consideration so that the requirements of each stage of the life continuum can be met.
- Provision of special facilities should be made to address diverse needs on a cost-effective basis, including healthcare for women at home and at clinics under the existing health system.
- In all healthcare situations, especially in gynecology, it is important to respect the integrity of women with disabilities, with special consideration for the requirement of respect for visually impaired women and women using interpreters.
- WHO and other relevant agencies should encourage governments to provide adequate training programmes for health personnel regarding the specific needs of women and girls with disabilities.
- There should be no discrimination, regardless of their age, against disabled women with regard to the availability of healthcare services and/or the interpretation of these services.
- In war-torn areas facilities to assist girls and women with disabilities with mobile health centers should be provided.
- Multidisciplinary health and medical care and research (such as neurological, gynecological, gerontology, social, etc.) should be encouraged to provide a more holistic picture of gender-specific impairments and diseases.
- Disabled women and girls should be made aware of the risk of HIV and AIDS. Contraceptive education and sexual education is essential in this respect.
- Women and girls with HIV or AIDS should be considered as women and girls with a disability and therefore obtain the same rights and privileges as other disabled women and girls and their concerns should be included into the interest areas of the disability movement.

The following suggestions are taken into consideration to promote the health status of women with sensory disabilities.

Role of Social Workers and Caretakers in Raising Health awareness of sensory disabled women in rural areas

- Organizing health awareness programme through camps, role-play, skit, booklets and notices, and organizing periodical health checkup for women with sensory disabilities
- Creating awareness on the general prevalence of diseases and general causes of diseases.
- Providing special care to the pregnant women with disabilities and the provision of special care in terms of medication, treatment and other needed health requirements with counseling.
- Parents should accept their child's disability as it is and they should take responsibility in providing proper intervention and healthcare to their female disabled children.
- Social workers should raise the awareness on maintaining sound health condition of the women with hearing impairment. Helping and guiding the women with sensory disabled in knowing about the various diseases and

diseases which are related to eye and ear.

Supportive services in Hospitals

- Women with disabilities should get the supportive services and guidance from the local PHCs, Government Hospitals and voluntary organizations in taking care of their health.
- Health practitioners should make periodical home visits to do health services for women with severe sensory disabilities and aged.
- Availability of special section and special doctors in government hospitals and in voluntary organizations for giving treatment for women with sensory disabilities.
- Health service personnel must be trained to offer informed and sensitive service and education addressing the health needs of girls and women with disabilities.

Role of Educational Institutions and workplaces

- Raising awareness on healthcare through community awareness programme, media and camps.
- Special educators, other teaching and non teaching staff in the institution should be aware of the health condition of the women with disabilities and also maintain their health profile. Self-

help skills should be taught to the women with sensory disabilities to maintain their health. These cumulative health profiles should be sent to the institutions for future references.

- A separate room can be allotted in schools and colleges for the girls with disabilities to get first aid and basic treatment.

Other Ways and Means of improving the Health status of women with sensory disabilities

- Public education and awareness programmes to promote positive perceptions on the potential of disabled women in society
- Accessible, well-equipped resource centers and clinics that will provide information on issues affecting disabled women
- To design and implement programmes such as raising awareness among school girls on basic healthcare issues.
- Development of specific measures to redress the social and economic exploitation of disabled women in rural areas and informal settlements
- Accessible, well-equipped resource centers and clinics that will provide information on issues affecting disabled women

- Healthcare workers and other caretakers should be oriented to interact with women with sensory disabilities.

- Barrier-free environment should be enhanced in the public places and educational institutions.

- Health records of the individual with disabilities should be maintained in Primary Healthcare Centers.

All Primary Healthcare Centers in the country should cover the women with sensory disabilities at home or by providing access to health clinics and hospitals. The practitioners in primary care centers should also be trained to recognize the onset of disabilities, causes and to take appropriate action accordingly. Relevant agencies and organizations should encourage the government to provide adequate facilities in training the health personnel regarding the special needs of the girls and women with sensory disabilities.

References

1. Alice Rajakumari, D. Rita Suguna Sundari, Digumarthi Bhaskara Rao, 2004, *Special Education*, Discovery Publishing House
2. S: Shaul, S., Dowling, P. J., & Laden, B. F. 1985 *Women and disability: The double handicap*, Transaction Books, Rutgers University, New Brunswick, NJ.



Proposed urban health mission to target slum-dwellers

Panabaka Lakshmi launches campaign on 'ksharasutra therapy'

Special Correspondent

HYDERABAD: The Centre will shortly launch the national urban health mission on the lines of National Rural Health Mission which was initiated two years ago.

Union Minister of State for Health and Family Welfare Panabaka Lakshmi told a meeting here on Wednesday that the programme would target urban population living in slums. The preparatory work was completed.

She was speaking at the inauguration of a campaign-cum-workshop on 'ksharasutra therapy', a minimal invasive ayurvedic para-surgical measure to treat ano-rectal disorders.

The campaign is taken up by the Department of Ayush in all States as a follow-up to a similar programme at the national-level which was launched at the All-India Institute of Medical Sciences (AIIMS), Delhi, in August.

Ambulance service

Ms. Lakshmi said the Centre had also proposed to extend ambulance services to the mandal-level throughout the country as part of the Reproductive and Child Health - II scheme. It would be networked with '108' emergency service.

S.K. Sharma, Advisor, De-



THERAPEUTIC ISSUES: Union Minister of State for Health Panabaka Lakshmi with senior doctors at the State workshop on 'ksharasutra therapy' organised at Gandhi Medical College in Secunderabad on Wednesday. - PHOTO: P.V. SIVAKUMAR

partment of Ayurveda, Delhi, said studies revealed that 'ksharasutra' (kshar meaning alkaline salt of plant origin and sutra is thread) was effective in treating piles, anal fis-

sure and fistula. It was recognised as a cost-effective.

P. Venkateswara Rao, Commissioner, Andhra Pradesh Vaidya Vidhana Parishad, said patients suffering

from these diseases were looking for relief and the system of medicine mattered little to them. A.Y. Chary, Director, Medical Education, said ano-rectal problems

were the most difficult to manage. Vijay Kumar, Commissioner, Ayush, sought a comparative analysis of the treatment by ayurveda and allopathy systems.

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Tamil Nadu to become smoke-free by 2012

Special Correspondent

CHENNAI: Chennai will become a smoke-free city by 2010 and Tamil Nadu a smoke-free State by 2012.

As a first step in this direction, Health and Family Welfare Minister Anbumani Ramadoss launched the Tamil Nadu Tobacco Control Coalition (TTCC) here on Sunday in the presence of Chennai Mayor M. Subramanian and released an audio CD on 'Smoke-Free World.'

Delivering the special address at the 'Consultation on Tobacco Control in Tamil Nadu,' organised by the TTCC and Pasumai Thaayagam, Dr. Ramadoss said that he would urge the State Chief Minister to make Tamil Nadu the first smoke-free State in the country. He has been urging the Chief Ministers of Delhi and Maharashtra to make Delhi and Mumbai 'smoke-free' ci-

National plan to curb use of tobacco in public places

ties. In the next 3-4 months, the Centre would form the Central Tobacco Regulatory Authority to monitor and implement tobacco control laws. It would be a law-implementing agency entrusted with full powers.

The Centre would also launch a national tobacco control programme to bring down the use of tobacco products in public places.

The programme would empower police, headmasters, bus drivers and conductors and law enforcers to penalise offenders. "The fine is Rs 200 per offence, whereas we want it raised to Rs 2,000," he added.

He urged people to take to the streets to oppose the use

of tobacco products in public places. Most people were not aware of the Tobacco Control Act that prohibited smoking in public places. Changes would be made in rules to make workplaces smoke-free zones.

"Wherever there are employees, be it hotel, bar, restaurant or office, it should be made into a smoke-free place to save them," he said.

Dr. Ramadoss said that around 40 per cent of health problems in India were due to tobacco products. "When tobacco consumption is coming down in developed countries, why should it go up in developing countries? If Bangladesh can bring down tobacco consumption, why can't we? If Chandigarh can become a smoke-free city, why can't Chennai," he asked.

Contrary to the popular belief that business would go down if smoking was banned,

he said, "The sales in pubs in Ireland went up by three times. People from neighbouring England started visiting Irish pubs, as it was smoke-free. Now, England is planning to ban smoking in pubs."

Mr. Subramanian said that over 2,500 people lost their lives every day due to tobacco epidemic. Hemant Goswamy, Brain Burning Society Chairman, Smoke-free Chandigarh, said that it took nearly four years for them to see the results.

He advised the TTCC members not to take anyone or anything for granted and put their foot down if things went wrong and to use the right to information as a tool.

E. Vidhubala, Tobacco Cessation Clinic, said that it cost Rs. 10 lakh to treat cancer. Prevention was much cheaper. However, the awareness among the public was low.

Healthy eating coupled with a regular exercise programme is the cornerstone in treating metabolic syndrome and reducing the risk for heart disease, stroke, diabetes, and other medical problems

Understanding metabolic syndrome

BY DR T R CHANDRASHEKAR

THE metabolic syndrome, a collection of unhealthy body measurements and abnormal laboratory test results, may identify persons at high risk for developing cardiovascular disease.

Aggressive lifestyle modification and possible use of medications to treat the conditions that make up the metabolic syndrome may reduce a person's chances of developing heart disease or stroke. The metabolic syndrome has also been called syndrome X or insulin resistance syndrome.

Definition

- Abdominal (waist) circumference greater than 40 inches for men or 35 inches for women.
 - High blood pressure (hypertension).
 - Hyperglycaemia (fasting blood sugar more than 110 mg/dL).
 - Elevated triglycerides (a type of fat in the bloodstream).
 - Low levels of high-density lipoprotein, also known as HDL or 'good cholesterol'.
- Having at least three of the above measurements means that an individual has metabolic syndrome, and is at risk for developing type 2 diabetes, coronary heart disease, heart attack, or stroke.

Treatment

Lifestyle modifications include weight loss, regular exercise, stopping smoking, and reducing dietary fat intake. Losing just 10

Healthy eating coupled with a regular exercise programme is the cornerstone of treating metabolic syndrome and reducing the risk for heart disease, stroke, diabetes, and other medical problems.

Prevention

Both weight reduction and maintenance of a lower weight can be achieved by a reduced calorie intake and increased physical activity. Use of principles of behaviour change is important. Achievement of target weight loss so as to decrease BMI to less than 23 should be the goal.

A realistic goal for weight reduction should be seven per cent to 10 per cent over six to 12 months. This results in the decrease in body weight as well as the insulin resistance.

Physical activity recommendations should include practical, regular, and moderate regimens of exercise, with a daily minimum of 30 to 60 minutes. Sixty minutes or more of continuous or intermittent aerobic activity, preferably done every day will promote weightloss and weight maintenance. The latter include multiple short (10-15 minute) bouts of activity such as gardening, jogging or swimming.

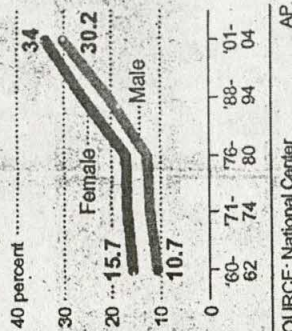
An equal balance between aerobic exercise and strength training is advised. Yoga-based interventions can have positive influences on mind-body relationships, and improve compliance to lifestyle changes. Eat a balanced diet low in saturated fats and high in nutrient-rich fruits and vegetables.

Do not smoke. Recognise that you may have a genetic (inherited) predisposition for diabetes, heart disease, and the metabolic

Living with obesity

The percentage of obese men has almost tripled since 1960, a health report found.

Prevalence of obese adults ages 20 and older



SOURCE: National Center for Health Statistics

per cent of excess body weight lowers blood pressure and improves insulin resistance.

Some persons may be able to treat high blood pressure and hyperglycaemia by altering their lifestyle alone.

In many individuals, lifestyle modification is not adequate, and medications must be used to decrease blood pressure, lower triglycerides, and increase the level of HDL. Because these problems are often linked, treating one aspect of the metabolic syndrome may help the other issues.

Regular exercise can help one lose weight, reduce blood pressure, and manage hyperglycaemia and insulin resistance.

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